

# Alameda Point Golf Course Development Feasibility Study

June 1998

This Study has been prepared for the City of Alameda, California

City of Alameda Golf Course Board

Alameda, California

Alameda, California 94524

City of Alameda Engineering

Alameda, California

Alameda, California 94524

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Alameda Point

Alameda, California

Alameda, California 94524

## Alameda Point Feasibility Study Golf Course Development June 1998



# **Alameda Point Golf Course Development Feasibility Study**

**June 1998**

This Study has been prepared by the Collaborative Efforts of:

**Kyle Phillips Golf Course Design**  
Granite Bay, California  
916-797-2141 tel 916-797-2151 fax

**Golf Research Group**  
Martinez, California  
510-228-1589 tel 510-228-0872 fax

**HMH Civil Engineering**  
San Jose, California  
408-487-2200 tel 408- 487 2222 fax

**Berlogar Geotechnical Engineering**  
Pleasanton, California  
925-484-0220 tel 925-846-9645 fax

**HGHB Architects**  
Monterey Bay, California  
408-375-9594 tel 408-646-9042 fax

This study was prepared under contract with the Alameda Reuse and Redevelopment Authority with financial support from the Office of Economic Development, Department of Defense. The content reflects the views of the Alameda Reuse and Redevelopment Authority and does not necessarily reflect the views of the Office of Economic Adjustment.

# Atmospheric Pollution Control Course Development Feasibility Study

June 1972

Prepared for the U.S. Environmental Protection Agency

Environmental Research Laboratory  
U.S. Environmental Protection Agency  
Research Triangle Park, North Carolina 27711  
Contract No. 68-03-0001-0001  
Project No. 68-03-0001-0001-0001  
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Final Report  
Submitted to the U.S. Environmental Protection Agency  
on June 1, 1972

This report was prepared under the direction of the U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Research Triangle Park, North Carolina. The work was performed by the Environmental Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. The work was performed under the direction of the U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Research Triangle Park, North Carolina.



# Table of Contents

<b>1. Summary &amp; Conclusions</b>	<b>3</b>
<b>2. Introduction</b>	<b>5</b>
<b>3. Site Plan Development</b>	<b>6</b>
I. Planning Guidelines	
II. Site Plan Objectives	
III. Recommended Site Plan	
IV. Maintenance Management	
V. Clubhouse Facility	
VI. Development Cost Estimate	
<b>4. Technical Site Study</b>	<b>18</b>
I. Water System	
II. Sanitary Sewers	
III. Storm Drainage	
IV. Electrical & Other Utilities	
V. Geotechnical Information	
VI. Earthwork & Grading	
VII. Recycling of Runway Pavements	
<b>5. Financial Analysis</b>	<b>32</b>
I. The Local Market	
II. Local Area Demographic Profile	
III. Golf Development Alternatives	
IV. Financial Projections	
V. Financing Options	



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# 1. Summary and Conclusions



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## 1) The location of the Alameda Point Golf Development Site is outstanding.

With a bayside location and views across the water to downtown San Francisco there is clear potential of creating a top quality course of dramatic beauty.

## 2) The importation of clean Merritt Sand is vital to the success of the project.

While the location is outstanding, the site is poor, being flat and mostly covered by runways. The poor site is saved by the tremendous opportunity of importing large quantities of sand from the Port of Oakland's dredge project. This offers the possibility of creating an undulating dune landscape reminiscent of historic Scottish Links on the approximately 214.5 acre site.

## 3) The demand for golf at Alameda Point is incredibly strong.

There is an overriding need for additional golf supply in the Alameda and the highly populated Bay Area. No new course has been built within the area for sixteen years. This leaves the Bay Area in a golf shortage, with a supply of courses just one quarter that of the U.S. average.

## 4) The Alameda Point Golf Course can be profitable.

The total development cost of the course with clubhouse and borrowing costs will be \$17.5 million. Positioned as a high-end daily fee facility it is projected that the course will carry 50,000 rounds per year with an average achieved green fee in the range of \$65 to \$105. While the facility will make an operational profit at the bottom level of the projected fee range the achieved green fee must exceed \$60 in order for the debt from the development costs to be adequately serviced.

Given the tremendous latent demand for golf and the clear success of other new high end daily fee courses in the region it is expected that a new Golf facility at Alameda Point would service its debt comfortably and deliver a profit.



**5) The new course could open for play in the spring of 2003.**

By making a commitment to proceed in 1998 with a very aggressive development, entitlement, and permitting process, the dredge sand operation could take place in early 2000. This could be followed by construction and grow-in of the golf course in 2001 and 2002, with a course opening target date of spring 2003.

**6) The construction of a world-class links-style golf course could create synergy for the entire Alameda Point Redevelopment.**

A major benefit flowing from the golf will be a renaissance effect on the whole redevelopment at Alameda Naval Air Station. The creation of a world-class golf course has a powerful halo effect on everything around it (e.g. Pebble Beach Golf Links). The course will create excitement, it will create prestige, and it will come into operation relatively fast. The concept of an anchor tenant is common in many developments. The golf course can act as an anchor tenant playing a major part in bringing other high end tenants.

## 2. Introduction

## 2. Introduction

The proposed Alameda Point Golf Links is located at the western edge of the city of Alameda, within the former Naval Air Station (NAS). The area is now known as Alameda Point, (Exhibit A) with the proposed links style golf course site on the northwestern tip of the old NAS airfield within portions of the abandoned runways and taxiway areas. A Community Reuse Plan prepared for the site in 1994 identified the area for the golf course. For purposes of this study, the area under consideration is all of the acreage in the Northwest Territory determined to be approximately 214.5 acres

The site has beautiful views of downtown San Francisco, the Bay Bridge and downtown Oakland, as well as the charm of being adjacent to the San Francisco Bay. However, the land itself is presently flat and unattractive predominately consisting of concrete and asphalt runways and taxiways. The high amount of population near this site coupled with the relatively low number of golf courses in the area, make this location ideal for public convenience.

The proposed golf course is to be carefully incorporated with other proposed uses, such as public access along the shoreline and the proposed wildlife refuge along the southern boundary which contains a nesting site for the Least Tern on a portion of the abandoned runway. The Port of Oakland and the U.S. Army Corps of Engineers has proposed to place in excess of 750,000 cubic yards of clean Merritt sand on the Alameda Point Golf Course site from a nearby dredge project they are currently undertaking. The quality and quantity of this dredge material will be a major consideration in determining whether the proposed links style golf course is feasible.

As the site consists of a Bay mud subsoil profile, the effects of settling from the loading of the site with fill material also must be considered.

Since all of the existing utilities on the NAS Alameda site were formerly under one ownership (the Navy), they were designed without consideration for future individual ownership and/or operation. Therefore, the transition from Navy use to public use from a public utility provider's standpoint will be challenging. Many of the existing utilities that will be required for the proposed use do not currently meet the standards of the governing agencies or utility providers, particularly storm, sanitary and water facilities.

In March 1998, the Alameda Reuse and Redevelopment Authority (ARRA) selected the Kyle Phillips Golf Course Design Team of consultants to analyze the potential for a links-style golf course on the site. The research and findings are included in the following report.







### 3. Site Plan Development

### 3. Site Plan Development

#### I. PLANNING GUIDELINES

ARRA Staff has determined that approximately 214.5 acres in the Northwest Territory is potentially available for a Golf Development and other required amenities. The RPP directed our team to conduct planning with the following guidelines:

- 1) An 18 Hole, World Class Links Style Golf Course with Clubhouse, Parking, Practice Facility & Maintenance Building.
- 2) Consideration for the importation of Clean Merritt Sand to the site from the Port of Oakland who is currently looking to dispose a portion of their 20 million cubic yards of sediment resulting from the proposed 50-foot dredging project at this site.
- 3) Consideration of a Public Park Site adjacent to the waterfront, accessible by vehicle.
- 4) Consideration of a 200 room Hotel Site in connection with the Golf Course Development.
- 5) A 100ft Buffer along the north and west waterfront for the development of a Public Bay Trail for pedestrian and bicycle use.
- 6) Consideration for Site Drainage, Irrigation, Runway Recycling and Possible Land Settlement.
- 7) Consideration of the neighboring Alameda National Wildlife Refuge and protection of the endangered species, the California Least Tern.

After initial site visits and meetings with ARRA staff and the Oversight Team, several concepts were developed and then reviewed. Taking into consideration their input as well as the Geotechnical, Engineering and Economic expertise of our team, we have developed recommended Development Site Plan Objectives in order to determine the feasibility of the construction and operation of such a golf course.

## II. SITE PLAN OBJECTIVES

- 1) The Links Style Golf Course should be of a World Class Standard. World Class simply defined means that the Course should be of the highest quality level of:  
a) Design and b) Construction, since the location is so readily accessible to a strong golf market. "Links Style" refers to the original seaside course, generally thought of today as originating in Scotland & Ireland. While there are many varieties of "Links" courses, true links are played near the sea, on sandy, free-draining soils and consist of low-fertility, low water rough grasses which grow up to 3 feet tall, and limited low shrub and ground cover vegetation.
- 2) The shoreline should be preserved as a pedestrian/bicycle trail. This provides a shoreline perimeter which is compatible with the true links style golf experience.
- 3) Vehicular access should be provided to reach the West Shoreline.
- 4) A Hotel Site could be a desirable amenity to the redevelopment of Alameda Point.
- 5) However, the Golf Course can stand alone economically without a hotel adjacent to it.
- 6) The Drainage of the site should be centrally collected and water recycled.
- 7) The Golf Practice Facility should be adjacent to the Clubhouse.
- 8) The 1<sup>st</sup> & 10<sup>th</sup> Tee should start at the Clubhouse.
- 9) It would be desirable if additional Clean Merritt Sand could be brought to the site to compensate for the settlement of the bay mud and add interest to the Golf Course.
- 10) The Golf Course Maintenance Facility should be centrally located within the Golf Course.
- 11) The Irrigation System should allow for the use of reclaimed water in the future.

BAY TRAIL/PARK SITE  
19 ACRES

GOLF CLUBHOUSE/HOTEL SITE  
15 ACRES

PRACTICE FACILITY  
10 ACRES

MAINTENANCE FACILITY  
2 ACRES

INTERNAL DRAINAGE  
5 ACRES

CAR PARKING  
1 ACRE

ACCESS ROAD  
6.5 ACRES

# Alameda Point Golf Links

18 Hole Championship Golf Course

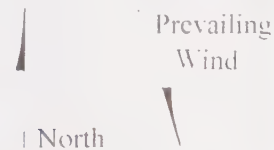
Alameda, California

Scale: 1" = 400'-0"

Date: June 1998

**KYLE PHILLIPS**  
GOLF COURSE DESIGN

5516 Riviera - Granite Bay, CA 95746  
Tel: (916) 797-2141 Fax: (916) 797-2145



TOTAL SITE 214.5 AC



### **III. RECOMMENDED SITE PLAN**

#### **Summary Site Plan Acreage Allowance**

<b>18 Hole Links Style Golf Course</b>		<b>161 Acres</b>
Playable Turf Areas	130 Acres	
Natural Grass Areas	26 Acres	
Drainage Areas	5 Acres	
<b>Park Site / Shoreline Bay Trail</b>		<b>20 Acres</b>
Car Parking	1 Acre	
Trails	2 Acres	
Natural Grass Areas	17 Acres	
<b>Golf Clubhouse and 200 Room Hotel Site</b>		<b>15 Acres</b>
<b>Entry Road to Park and Golf Course</b>		<b>6.5 Acres</b>
<b>Golf Practice Facility</b>		<b>10 Acres</b>
<b>Golf Maintenance Facility</b>		<b>2 Acres</b>
<hr/> <b>Total Acreage</b>		<b>214.5 Acres</b>

**A. 18 Hole Championship Golf Course****161 Acres****Playable Turf Areas****130 Acres**

The course consists of 2 nine-hole loops returning back to the clubhouse with a par of 72 and total length of over 7000 yards from the championship tees. Multiple forward tees provide a variety of reduced lengths to as little as 5500 yards. Returning nines adds considerable income to the operation of the course, as players have the opportunity to play only nine holes before or after their workday, as well as stop for a clubhouse food purchase on their way to the second nine.

**Natural Grass Areas****26 Acres**

In addition to the primary golf play areas; the course would weave through a desirable area of natural grass. These areas coupled with the addition of modeled sand fill and proximity to the bay would allow for a true links style golf course to be created on the site. The use of 17 acres of natural grasses in the Park Site combines with the 26 acres in the Golf Site to provide 43 acres (over 20%) of natural grasses in the proposed project.

**Drainage/Detention Basin Areas****5 Acres**

The central drainage system would be created to resemble a drainage burn found on many Links-style Golf Courses in Scotland and Ireland and used to collect the runoff water from the site. The water then would be collected at the East end of the site in the irrigation water storage pond and reused on the Golf Course. The shaping of a Links-style Course is conducive to localized storm water retention within the course. The coefficient of runoff is also significantly reduced when turf grass areas, rather than impervious surfaces dominate.

**B. Parksite/Shoreline Bay Trail Park & Car Parking****20 Acres**

The proposed Park Site contains 17 acres of natural grassland and Bay Trail. The car parking location near the southwest corner of the site minimizes the impact of automobile traffic along the Shoreline and allows for central access to the Bay Trail, both to the north and the south of the site. The proposed location of buildings and utilities intentionally avoids the West Shoreline old disposal site, enhancing and preserving the integrity of the Shoreline (See Exhibit A dated March 15, 1997).

**C. Golf Clubhouse and 200 Room Hotel Site**

**15 Acres**

The Golf Course Clubhouse Site is combined with a potential Hotel Site in the North Central portion of the site. This location provides for the primary views to the West towards the San Francisco Skyline and across portions of the Golf Course, while still being near the North Shoreline for a possible boat access connection with the Bay. The economic portion of this report indicates that the golf course can stand alone without the development of a hotel site. It is assumed that the hotel would be financed and constructed separately from the Golf Course Clubhouse on its own time line, thus those costs are not included in the project development budget.

**D. Entry Road to Bay Trail and Golf Course**

**6.5 Acres**

The access road has been shifted to the South portion of the property in order to protect the shoreline and to limit the shoreline to pedestrian and bicycle use only. The road should be screened from the golf activities to the North and the refuge site to the South. If desirable it could be used in conjunction with the Bay Trail path to the North to make a pedestrian loop system around the site. The Parking Area is located just south of an old disposal site indicated on Exhibit A.

**E. Golf Practice Facility**

**10 Acres**

Located adjacent to the Golf Clubhouse and near to the first tee allowing golfers easier access and encourages greater use of the facility. This facility would include a practice green, chipping green and full-length practice range with a 1.5-acre natural tee surface. Artificial mats should be provided along the back of the tee for use during the winter months.

**F. Golf Maintenance Facility**

**2 Acres**

The Maintenance facility is located at the back end of the practice range in a private yet reasonably central location for access to the course. A central location will save staff time and reduce wear on the equipment.

#### IV. MAINTENANCE MANAGEMENT

It is important both to the economic and environmental well-being of the Alameda Point Golf Links that the course be maintained at the highest level. The course has been designed with a closed drainage system which allows runoff from the course to remain onsite and be reused. As fertilizers and pesticides will only be used on a portion of the site after establishment, the site has the opportunity to be self cleaning through the uptake of chemicals by turf grasses and other grasses through their natural processes in a controlled environment.

In order for the management of the golf course maintenance to be successful at a top level the following considerations must be given in the ultimate design, construction and management of the course.

1. Irrigation system should contain a computerized control system with individual head control.
2. Surface drainage should be provided at minimum slope of 2.5% within the internal drainage system.
3. Use native or naturalized turf species outside of all primary golf play areas.
4. Compost all grass clippings when not agronomically possible to leave the clippings.
5. Waste products should be recycled or disposed according to the local legal disposal techniques.
6. Employ the principles of an Integrated Plant Management (IPM) system. This would include such practices as regular monitoring, record keeping and non-chemical pest control measures.
7. Store and handle all pest control and nutrient products in a manner that minimizes worker exposure and/or the potential for point or non-point source pollution. Employ proper chemical storage practices and use suitable personal protective equipment and handling techniques.
8. Use nutrient products and practice that reduce the potential for water contamination such as slow release fertilizers, selected organic products, and/or fertigation.
9. Test and monitor soil conditions regularly and modify practices accordingly. Choose nutrient products and time applications to meet, not exceed, the needs of the turfgrass.
10. Maintain continuing education of applicators, including state licensing.



## **V. CLUBHOUSE FACILITY**

The Alameda Point site offers opportunities for the clubhouse, as well as the golf course, which are unmatched anywhere. Situated in the midst of one of the world's great metropolitan areas, the facilities are poised to satisfy an under-served market for both the golf and banquet business. With dramatic views of San Francisco landmarks immediately recognizable throughout the world, the clubhouse will be a well used facility where golfers will want to linger after a round of golf and take in the magnificent views of the golf course and city skyline. The design of the clubhouse should capitalize on these views in its service to the golfer as well as the community at large. The availability of equally dramatic nighttime views suggest that the clubhouse could be just as viable after dark. By promoting after dark usage as well as an appropriate amount of non-golf banquet business, the clubhouse could serve a broader segment of the community.

### **Golfers Grill/Restaurant**

A combined grill and bar with table seating for approximately 120 is proposed for the facility restaurant. The seating capacity of 120 will easily accommodate the typical golfer traffic and allow for a viable evening restaurant/bar business as well. Exhibition cooking and a self service counter will provide both operational efficiency and flexibility. Properly positioned relative to the 9th green and 10th tee, this arrangement will obviate the need for a snack shack or halfway house.

### **Tournament Room**

There is a common need and popular support for a separate room to accommodate a variety of groups of between 25 to 50 people. The primary use of this room would be for tournament groups (many tournaments are for 80 players or less). Other uses for this room include board meetings for various local organizations, classroom golf training, business meetings and seminars. For maximum flexibility, the Tournament Room should have direct access to the kitchen and bar and be positioned adjacent to the golfers grill/restaurant to provide overflow grill/restaurant capacity. It should also be combinable with the Banquet Room to accommodate larger tournament and banquet uses.

### **Banquet Room**

The Banquet Room, as proposed, could cater to a demand currently unmet in the City of Alameda, i.e. a facility to accommodate full field golf tournament dinners and non-golf events (weddings, anniversaries) in the popular size of 200-300 people.

## Pro Shop

The program anticipates a full service Pro Shop selling both hard goods and soft goods.

## Administration

A modest Administration Area is proposed to accommodate a golf course manager, banquet manager and clerical support.

## Recommended Program

## Square Feet

A.	Golfers Grill/Restaurant	120 Seats	2,640
B.	Bar/Self Service Counter	Exhibition Cooking Casual Sports Atmosphere Contiguous with Grill Accessible to Tournament Room Connected to Kitchen 2 Bar Stations 1 Self Service Station	400
C.	Tournament Room	80 Seats	1,400
D.	Banquet Room	220 Seats--Combinable With Tournament Room	4,000
E.	Table Storage		400
F.	Banquet Storage	AV Equipment, Misc. Supplies	100
G.	Kitchen & Banquet Prep	Exhibition Grill @ Restaurant	3,000
H.	Restrooms	Main Banquet	600 600
I.	Main Lobby/Foyer	May Be Exterior Space	400
J.	Banquet Lobby		400
K.	Pro Shop		2,200

L.	Administration	500
M.	Mechanical Room	<u>400</u>

<b>SUBTOTAL A-M</b>	<b><u>17,040</u></b>
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Exterior Walls/Circulation	<u>x1.06</u>
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<b>TOTAL</b>	<b><u>18,000 sq. ft.</u></b> (Rounded)
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N.	Comfort Stations	2 @ 200 sq. ft.	400
O.	Cart Storage	80 Carts Work Area & Tools Cart Wash Employee Toilet	5,400
P.	Maintenance Facility		<u>8,000</u>

<b>TOTAL BUILDING FACILITY</b>	<b><u>32,000 S.F.</u></b> (Rounded)
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## **VI. DEVELOPMENT COST ESTIMATE**

	<b>Construction Item</b>	<b>Description</b>	<b>Budget Price</b>
1.	Mobilization	Movement & Setup of Contractor Staff Equipment to the Site.	\$100,000
2.	Site Clearing	Remove & Dispose Cleared Brush.	\$5,000
3.	Import & Spread Clean Merritt Sand	Assume 1,800,000 Yards of Clean Merritt Sand (Approx. 7' Over Site Before Settlement).	-0-
4.	Import Soil Amendment	2" (250 YD/per AC) @ 100AC=22,500YDS @26.00/YD.	\$585,000
5.	Earthmoving & Shaping	Assume Dry Level Site. Includes Site Cuts, Excavations, Shaping of Fairways & Roughs.	\$1,280,000
6.	Subsurface Drainage	Installation of Main and Supplemental Drainage For Golf Course & Entry Road.	\$325,000
7.	Greens Construction	Construction of 18 Greens plus Practice Green & Chipping Green to USGA Specification.	\$525,000
8.	Tees Construction	Soil Amendment Included.	\$310,000
9.	Bunker Construction	Sand Included.	\$190,000
10.	Grassing of the Golf Course & Natural Areas	(±200 AC with Partial Hydroseeding).	\$580,000
11.	Irrigation/Pump Station	Provide State of the Art Computer Operated/ Individual Head Control System. Natural Area with Establishment Water Only.	\$1,450,000
12.	Stream/Pond Construction	PVC Lining Included in Pond.	\$190,000
13.	Erosion Control	Wind and Silt Fencing; Possible Sod.	\$80,000
14.	Bridges	Golf & Maintenance Access Across Burn.	\$25,000
15.	Concrete Cart Paths/Curbs	8' Wide Full Length with Partial Curbs	\$550,000
16.	Landscaping	Low Growing Shrubs/Groundcovers	\$450,000
17.	Site Fencing/Security	Security Personnel and East Boundary Fencing	\$70,000
<b>SUBTOTAL</b> <b>Items 1 - 17 Course Construction Subtotal</b>			<b>\$6,715,000</b>



	Construction Item	Description	Budget Price
18.	Golf Course Planning/Irrigation /Landscape Design Fees	8% of Project Cost.	\$480,000
19.	Civil Engineering/Geotechnical Fees		\$275,000
20.	Clubhouse/Maintenance Building Design Fees	8% of Clubhouse Cost.	\$135,000
21.	Permitting/ Project Management Fees		\$400,000
22.	Maintenance Building/Site Improvements	(8,000 - 10,000sq ft).	\$550,000
23.	Restrooms/Rain Shelters	Golf Course/Trail Facilities.	\$90,000
24.	Golf Course Signature/Furniture		\$40,000
25.	Golf Course Clubhouse/ Golf Cart Storage/Parking	10,000sq ft Clubhouse & 5,400sq ft Cart Garage.	\$2,900,000
26.	Entry Road		\$1,050,000
27.	Public Hike/Bike Trail Construction	Assumes Maintenance by the East Bay Regional Park District	\$225,000
28.	Supply of Water & Electricity to Irrigation Lake		\$450,000
29.	Supply of Sewer, Water and Electricity to Clubhouse		\$1,580,000
30.	Removal/Recycle of Concrete/Asphalt Runways	No Cost or Revenue Generated.	- 0 -
31.	Removal of Buildings/Bunkers		100,000
32.	Clean up of Hazardous Waste	Performed by the Navy	-0-
<b>Subtotal Items 18 - 31</b>			<b>\$8,275,000</b>
<b>Total Project Development Cost</b>			<b>\$14,990,000</b>

**Operating Cost Items:**

33.	Maintenance Equipment	Lease Equipment	Operating Cost
34.	Growing In of Golf Course Prior to Opening	(9 Months \$450,000)	Operating Cost
35.	Golf Carts	Lease 75 Carts @ \$50,000	Operating Cost
36.	Irrigation Water Cost	\$215,000/yr (Based on Yearly Average Consumption of 225,000 gal./day)	Operating Cost

## 4. Technical Site Study

## 4. Technical Site Study

### I. WATER SYSTEM

Water will need to be provided for potable water consumption, fire protection, and irrigation. Potable water will serve the golf clubhouse, hotel, the maintenance area, drinking fountains along the golf course, and the proposed Bay trail park facility. Fire protection water will supply fire hydrants and sprinklers for the hotel and clubhouse. A separate irrigation system will be supplied from a lake to serve the golf course and other landscaped areas.

#### A. Existing Capacity and Condition

The existing infrastructure in the project area consists of a dead end system of 6" and 8" pipe of unknown condition. The supply line from the old base area is a 6" cast iron pipe. Other sections of the system include asbestos cement pipe and wrought iron pipe. Original water piping on the base dates to the early 1940s. No corrosion control facilities are incorporated into the water distribution system. The Moffatt & Nichols report ("Utility Study, Alameda Naval Air Station," Dec. 1996) indicates soils of "mild to moderate" soil corrosivity within the Northwest Territories area. After fifty years of service, pipeline failures due to corrosion can be anticipated.

A separate fire protection sprinkler distribution system exists in the Main Base area. Water mains are much larger in diameter than a typical municipal water system. The East Bay Municipal Utility District (EBMUD) has retired this system due to poor condition, unusual sizing, and its redundancy with the potable water system.

EBMUD is currently the water provider for the project area. EBMUD had planned on abandoning the existing pipes in the former runway area, but may consider keeping them operational if they are useable and can be adequately maintained. However, it is likely that the existing system is undersized and/or is in poor condition.

#### B. Demand

The estimated peak usage for irrigation of the golf course is 500,000 gallons per day delivered over a six to eight hour period. This is considerably lower than many new courses, which consume almost 2 times this amount on peak days. This low usage figure of 500,000 gallons per day is based on the fact the course is to be a links style and use less turf areas than normal. The proposed 3-acre (approximate surface area) lake would have a draw down of approximately six inches. The replacement water for the reservoir could be received over an extended period.



The existing 6" cast iron pipe located nearby would probably be suitable for this replacement water, depending on the available pressure. During the initial growing in of the golf course the demand could exceed 800,000 on a peak day.

Fire protection requirements for the City of Alameda are determined by the 1994 Uniform Fire Code. The proposed hotel and clubhouse would require a fire sprinkler system. This system would need to be isolated from the potable water system by branching from the water main prior to entering the building. The requirements for fire hydrants would depend upon the type of construction and size of the hotel. A 200-room hotel would typically be about 120,000 square feet and require 5,000 gpm to 5 hydrants (1,000 gpm each). The maximum velocity of flow in pipes should not exceed 10 fps. Inflow should meet peak hour potable water demand plus fire fighting water demand.

For purposes of this study, it is assumed that approximately 5,500 feet of 12" water main line will be constructed for the potable water and fire protection facilities. This line would connect the clubhouse/hotel to the 12" water main near Building 20. It may be necessary to connect the water supply to a 12" main line near the intersection of Second Street and Avenue A, increasing the total distance required to approximately 7,000 feet of 12" pipe. The required distance would be determined by the alignment of the access road, and upon whether EBMUD would require the pipe to be placed within the roadway. The irrigation supply pipeline is assumed to either reuse the existing 6" cast iron pipe or to use reclaimed water supplied by EBMUD.

Should a new water main be necessary, the size would be computed by EBMUD based on demand. The clubhouse, hotel, park facilities, golf course, and fire protection systems would all be factors in determining the necessary pipe size. EBMUD's current design standards allow for the use of welded steel or PVC pipe for water lines 8" in diameter or less. Ten-inch lines are not typically constructed by EBMUD. Pipelines 12" and larger are required to be welded steel. Cathodic protection is required on all welded steel pipelines and the metallic fittings installed on PVC lines. The procedure for requesting a new water main would be to contact the New Business division at EBMUD.

Using the EBMUD rate of \$1.72/100cu.ft.(748 gal.), plus their flow charge fees we would anticipate the yearly cost of water for the golf course to be approximately \$215,000. In conversations with Mona Foster-White of EBMUD, it was indicated that this rate could be reduced slightly depending on exactly how the base redevelopment is serviced by EBMUD.

EBMUD may be interested in providing the golf course with reclaimed water for irrigation. However, in speaking to Richard Harris of EBMUD, it was determined that the nearest source would be their treatment plant at the base of the San Francisco-Oakland Bay Bridge and the cost of the reclaimed water would be only 5-10% less than potable water. A new supply of this water would need to be piped several miles to the proposed on-site lake. The cost of installing a new line

to the site would likely be prohibitive to EBMUD. The use of reclaimed water for irrigation would significantly reduce the potable water demand for the project. If reclaimed water is used for irrigation, it may still be prudent to design the potable water system to provide the course with enough capacity for irrigation with fresh water, should reclaimed water become unavailable.

Another possibility may be to design the golf course using a potable water source which could be mixed with reclaimed water from a separate sewage treatment plant servicing all of the new developments at Alameda Point. As new projects came on line they could borrow potable water from the golf course and in exchange provide the golf course with an equal amount of reclaimed water. Withstanding further investigation as to the required size, set up cost and operating cost of the sewage treatment plant, this concept could be a water efficiency model for other base redevelopment projects. Additional reclaimed water could also be used from this treatment plant for the proposed parks, soccer fields and landscaped areas as they are developed.

C. Conclusions and Recommendations

The most suitable tie-in point for a new water main would be to at 12" main line near Building 20. This location is approximately 5500' from the proposed location of the clubhouse and hotel. The new water main should be sized for potable water, fire protection and irrigation uses. A smaller pipe supplying the west portion of the site will also need to be constructed. The irrigation system should be designed to accommodate the possible future use of reclaimed water.

D. Contact information

The following individuals were contacted for information in developing this portion of the feasibility study:

*City of Alameda -*

Gail Carlson, Engineering and Design division  
Michael Edwards, Fire Department  
Rich Delgado, Sr. Mgmt. Analyst, Alameda Pt.

*EBMUD -*

Bill Kirkpatrick, Engineering  
David Rehnstrom, Engineering  
Richard Harris, recycled water  
Mona Foster-White, New Business

## II. SANITARY SEWERS

### A. Existing Capacity and Conditions

In general, the Northwest Territories has a total of six pump stations and one lift station of marginal to unsatisfactory condition. Two of these systems may be usable by the proposed golf course and recreational facilities with some updating of equipment.

Lift Station 13 (referred to as LS-13 in the Moffatt & Nichols report dated December 1996) serves the recreational area where the old skeet and pistol ranges were located. It discharges to a leach field via a septic tank. The pump station consists of a single 1.6 hp submersible centrifugal pump, constant speed, with a capacity of 15 gallons per minute, at a total dynamic head (TDH) of 20 feet. It was evaluated for condition and rated as "marginal to unsatisfactory" by the Moffatt & Nichols utility investigation conducted in 1996.

Pump Station 12 (PS-12) which served Building 420, consists of a single 5 hp submersible centrifugal pump, constant speed, with a capacity of 250 gallons per minute at a TDH of 30 feet. It was rated as "marginal" by the Moffatt & Nichols investigation. The pump station utilizes an existing 4" diameter asbestos cement force main, approximately 3,100 feet in length to convey the sewerage to the east and eventually to the Oakland Naval supply Center. The force main was rated in "fair condition".

Overall, the utility investigation conducted by Moffatt & Nichols indicates that six of the seven existing pump stations serving the Northwest Territories can be used to provide long range service to the proposed golf course, as well as light industrial and commercial uses in this area (although none are proposed).

### B. Flow Demand

The lift station LS-13 and associated septic tank and leach field, which served the abandoned recreational area, are ideally located for possible reuse to serve a rest room facility located adjacent to the proposed parking area for the future Bay Trail access point. The flow demand for a new rest room facility, if proposed, is virtually unchanged from its former use. The existing lift station pump would likely be replaced with a new pump of similar capacity, and the septic system (tank and leach field) would either be rehabilitated or abandoned in favor of a force main connection to PS-12.

The existing pump station PS-12, at the reported capacity of 250 gpm, exceeds the demand required for the proposed 200-room hotel and clubhouse facilities by about three times. The combined peak flow for the hotel/clubhouse facilities is calculated to be approximately 80 gpm at a conservative total dynamic head of 50



feet, which includes head losses due to pipe friction, pump inlet and elevation differential between inlet and outlet piping.

C. Conclusions and Recommendations

Lift Station 13, and the associated septic tank and leach field are sufficient in capacity to serve a new rest room facility in the Bay Trail access recreational area, if desired. The pump would be replaced, the tank pumped and inspected and rehabilitated as necessary to return the system to a good operating condition.

However, there is a possibility, given today's strict water quality concerns, that the existing septic system located this close to the Bay will not be allowed by the Regional Water Quality Control Board. If this occurs, the need for a restroom facility will need to be evaluated and either another (farther inland) location will be determined or the existing lift station could be retrofitted to delete the leach field, and replace it with a force main to convey the sewage to Pump Station 12. For purposes of this feasibility study, it is assumed that the latter case will apply.

Therefore, we recommend that if it is desired to located a new restroom facility in this area, the existing lift station should be retrofitted with a new pump, and a new force main connection, approximately 1,350 feet in length, should be constructed to connect the restroom facility to Pump Station 12.

PS-12, given the stated capacity, is more than adequate to service the proposed hotel/clubhouse facilities. The size and configuration of the wet and dry well of the station is unknown, but assumed adequate in size and condition to be retrofitted with new pumps.

The 4" diameter force main is adequate in size to be used for the proposed facilities. However, due to the age, pipe materials and type of joints associated with asbestos cement pipe and the "fair" condition assessment by Moffatt & Nichols, it is recommended that a new force main be constructed. It is further recommended that the new force main be constructed using high-density polyethylene pipe due to its resistance to corrosion, reduction in the number of required joints, low coefficient of friction, and relative ease of installation and ability to withstand potential settlement.



### III. STORM DRAINAGE

#### A. Existing Capacity and Condition

The existing storm drainage system in the project area appears to date to the original construction of the base in the 1940s. The system consists primarily of paved invert corrugated metal pipes (PIC) leading to flap gate outfalls in the Oakland Harbor and San Francisco Bay. In addition, several of the pipes are concrete; at the East End of the project area, a new 30" PVC pipe with a check valve outfall has been recently installed (circa 1992). The Moffat and Nichol study assessed the storm drainage condition and found most of the system to be in poor condition. This assessment considered such factors as age, material, and location. Unfortunately, no direct inspection of the storm drain system was performed in the project area. (CCTV inspection was performed at other locations of NAS Alameda, and may be continuing.) Inspection of other areas at NAS Alameda has found the storm drainage system to be under maintained and inadequately sized to handle design storms according to the City of Alameda standards.

#### B. Demand

Surface drainage in the project area would fall into two categories: golf course runoff and paved/developed area runoff. Golf course runoff would occur through surface flow and an under drain system leading to an internal drainage canal. The canal would flow into a retention basin at the East End of the project area. The under drain would be part of a new drainage system. The existing paved areas over which the golf course would be built would allow very little infiltration.

The paved/developed areas would drain to inlets leading to existing outfalls. Prior to release from outfalls, drainage water would likely require pre-treatment using a bio-swale or vaulted oil/grease separator. The paved/developed areas would likely consist of four areas:

##### 1. Parking Lot for the Bay Trail/Park Site - 1 acre

An existing drainage inlet to an 18" PIC pipe leads to an existing outfall ("GG") nearby. A preliminary analysis indicates this system may be reusable. The condition of the pipe is unknown, but is likely poor. Sliplining or other rehabilitation methods might be viable. A more detailed inspection of the pipe condition, as well as determining invert elevations is required before determining whether reuse is an option.

2. Golf Clubhouse/Hotel - 14 acres

Existing inlets and drainage pipes in the vicinity of the proposed golf clubhouse and hotel are undersized. Two 12" PIC pipes leading to an outfall ("V") are nearby. A preliminary analysis using City of Alameda design criteria indicates that several 24" reinforced concrete pipes would likely be required.

3. Maintenance Facility - 2 acres

A 12" PIC pipe is in the vicinity of the proposed maintenance facility. A preliminary analysis indicates this pipe would be inadequate.

4. Access Road - 7 acres

The proposed access road is along the southern perimeter of the site. A detailed drainage analysis was not performed. Only a few existing drainage pipes are near the proposed location. Street runoff would be conveyed via gutters to a storm drain system. Some of this runoff at the East End of the road could be directed toward the newer PVC system leading to Outfall "Z". The remainder of runoff would require a new storm drain and outfall at the West End of the project. The length of road and flat terrain will be a design challenge.

C. Conclusions and Recommendations

The majority of surface runoff for the golf course will be redirected back into the on-site lake for reuse in irrigation. For the paved/developed areas most of the existing storm drainage pipes at the project site will not be suitable due to size, condition, or location. For some smaller drainage areas such as the car parking lot for the Bay trail/park, the existing pipe(s) may be reusable with some rehabilitation and modification. Reuse of any of the existing system must be carefully considered. If the drainage pipes were already past their expected service life, it would be better to install new pipes. (The Moffat and Nichol report estimates the expected service life of PIC at 25 years.) The City of Alameda has stated that existing storm drainage facilities could be used if the required flow capacity was met. However, new storm drains would need to be constructed per the city standards. The City standards require a 12" minimum pipe of reinforced concrete, vitrified clay (not recommended), or PVC. The existing outfalls are a potentially valuable asset for reuse; if they can be adapted, it may make permitting the work easier if they are considered to be modifications, rather than new structures.

#### IV. ELECTRICAL AND OTHER UTILITIES

##### A. Existing Capacity and Condition

Other utilities of interest to the proposed golf course include electricity, gas, telephone, and cable service. For the purposes of this report, these systems were minimally studied.

The electrical system in the project area has been partially de-energized. Portions of the system are still active throughout the project area, extending out to the San Francisco Bay, where a navigation beacon is active. Several transformers have been taken out of service or removed. However, much of the wire infrastructure remains in place. From the Moffat and Nichol report, the average age of the electrical system is believed to be about 40 years old and consists of a 12 kV and 4 kV system. Most of the cabling is underground in ducts. Electricity is supplied by the Bureau of Electricity from its Cartwright substation. The Bureau has ample capacity to meet any anticipated future uses at Alameda.

There is no gas service at the project site. A 6" PG&E steel gas main exists approximately 7000' from the proposed hotel site. Telephone service exists in the project area, but no information on its configuration was available for this study. The former base phone system, now owned and operated by Pacific Bell, is modern and should be capable of expanded service to our project area. Cable television is provided to the former base area by TCI. It is not known if cable service exists at the project site.

##### B. Demand

The demand for electricity, gas, telephone, and cable service was not studied. Electricity will be needed for the clubhouse, hotel, maintenance facility, park facility, and street lighting. Gas, telephone, and cable service will also be required by the clubhouse and hotel.

##### C. Conclusions and Recommendations

It is likely that significant electrical equipment such as switches and transformers will need to be installed. New distribution lines for electricity, gas, telephone, and cable should be anticipated. These utilities could be combined into a joint trench.



## V. GEOTECHNICAL INFORMATION

The geotechnical related issues are addressed by Philip Tse of Berlogar Geotechnical Consultants in this section.

### A. Existing Conditions

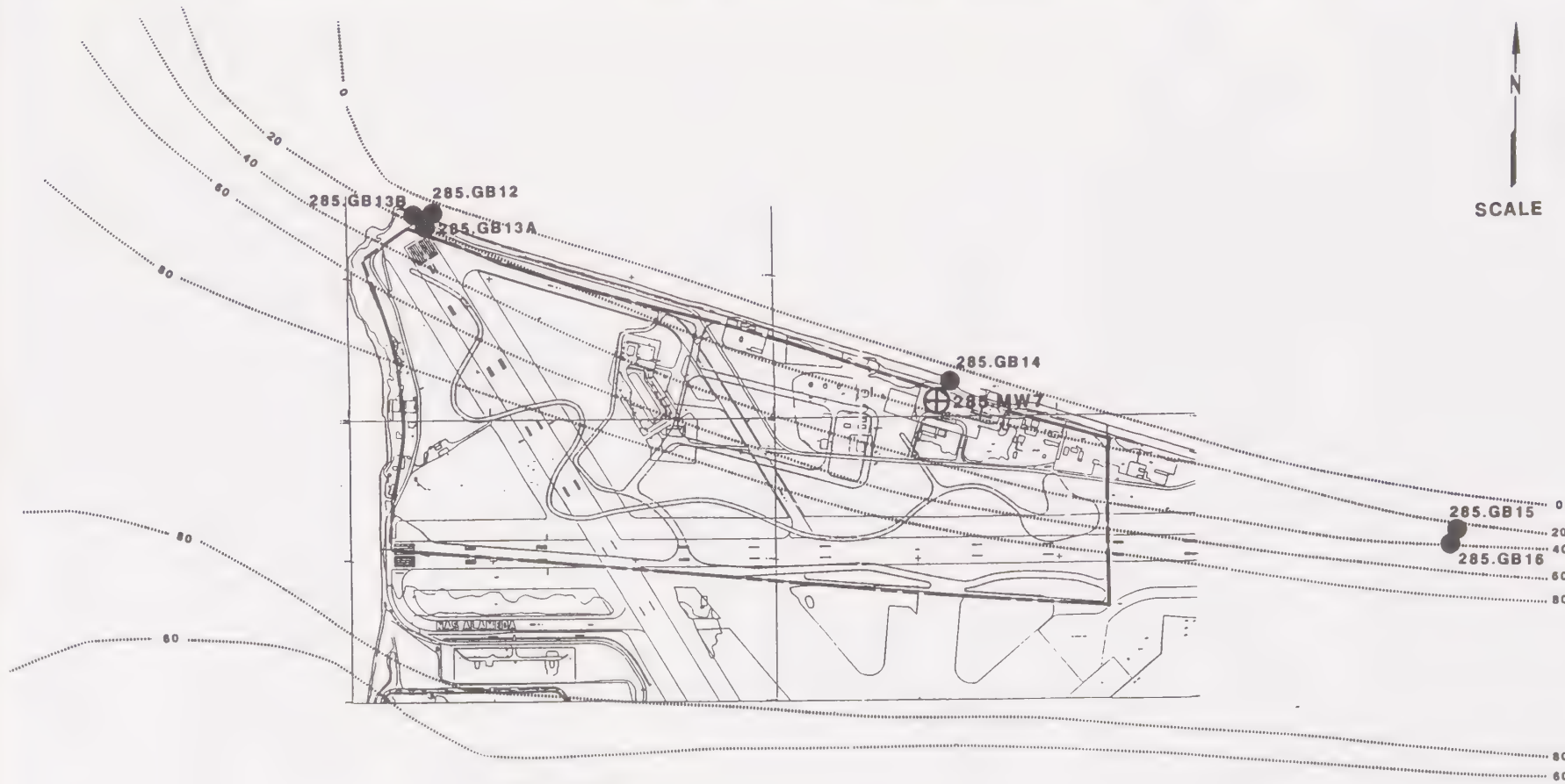
Based on our review of the February, 1998 draft report prepared by Subsurface Consultants, Inc. (SCI) for the Oakland Harbor Navigation Improvement Project and the Special Report 97 entitled "Geologic and Engineering Aspects of San Francisco Bay", by California Division of Mines and Geology, the site is probably underlain by about 10 to 20 feet of relatively loose sandy fill and up to about 95 feet of highly compressible Bay Mud. The Bay Mud is underlain by dense to very dense Merritt sand of San Antonio Formation. Below the Merritt sand, alluvial soils of stiff clays and very dense sands were encountered in one of SCI's borings to a depth of about 266 feet. The top of the bedrock is estimated to be at depths of more than 450 feet below the existing ground surface. A site plan, Exhibit B shows the SCI boring and monitoring well locations and the estimated Bay Mud thickness mentioned in the Special Report 97 within the vicinity of the site.

As encountered in SCI's borings, ground water is at about 5 to 6 feet below the existing ground surface. The shallow ground water condition will pose some challenges to any deep excavation at the site.

### B. Conclusions and Recommendations

We understand that the present plan is to raise the site by about 4 feet using imported fill from the soils dredged from the nearby shipping channel (the Inner Harbor of the Port of Oakland). Because of the presence of highly compressible Bay Mud, significant settlement is anticipated as a result of Bay Mud consolidation under the fill load. For 4 feet of proposed fill over 95 feet of Bay Mud, settlement as much as 3 feet may occur. Based on a 90-foot thick Bay Mud, we estimate that it will require about 9 to 10 feet of new fill to raise the site by 4 feet and approximately 50 and 90 percent of the settlement will occur in about 10 and 60 years, respectively. The settlement rate can be accelerated by pre-loading and/or installing wick drains through the Bay Mud. In general, 10 feet of surcharge (in addition to the 9 or 10 feet of fill to raise the site) will increase the settlement rate by a factor of 2 to 3. Additional import fill may be required for the surcharge; after the pre-loading, the surcharge will need to be removed. Installation of wick drains through the Bay Mud could reduce the consolidation time too less than one year. However, the wick drains will form relatively permanent conduits, which may become avenues for possible contaminants migration. The environmental concern should be considered and addressed if wick drains are chosen. In any case, the residual settlement should be considered in the design of surface drainage and gravity underground utility, as well as the golf course layout.





### EXPLANATION

- — — — — PROPERTY LINE
- ..... 80 ..... THICKNESS OF BAYMUD (BASED ON SPECIAL REPORT 1997 BY CALIFORNIA DIVISION OF MINES AND GEOLOGY)
- 285.GB16  
● SCI MONITORING WELL
- 285.MW7  
⊕ SCI GEOTECHNICAL BORING

**PROPOSED ALAMEDA  
POINT GOLF COURSE  
ALAMEDA, CALIFORNIA  
FOR  
HMH INCORPORATED**

**Berlogar Geotechnical Consultants**  
SOIL ENGINEERS • ENGINEERING GEOLOGISTS

**Exhibit B**

BASE: GEOTECHNICAL INVESTIGATION PLAN PROVIDED BY SUBSURFACE CONSULTANTS, INC., DATED 12/97, AT A SCALE OF 1"=2000'

The loose sandy fill is likely to be liquefied by the severe shaking of a major earthquake on the nearby Hayward or San Andreas faults, as well as other active faults in the San Francisco Bay area. Seismic settlement, lateral spread, ground cracks, and lurching could occur at the site as a result of liquefaction. Without appropriate mitigation, the areas near the bay, shipping channel, and proposed lake are prone to lateral spread and lurching (seismic slope failure). Based on our previous experience, areas within the outer slope edge on the order of 50 to 200 feet may be subject to significant ground damages due to lateral spreading and lurching.

Based on Special Report 97, it appears that the clubhouse/hotel area is likely underlain by about 40 to 70 feet of Bay Mud. Because of the presence of relatively thick Bay Mud, the clubhouse/hotel will likely have to be supported on deep foundations of pre-cast, pre-stressed concrete piles. Including the structural supported floor slab, the cost of the pile foundation is roughly estimated to be about \$35 to \$40 per square foot of building footprint.

## VI. EARTHWORK AND GRADING

### A. Existing Conditions and Future Considerations

Some of the existing conditions that will need to be considered in connection with earthwork and grading are as follows:

- The existing runway pavements, as shown on Exhibit C, should be broken up and left in place, except where deep excavation is required for placement of underground utilities or drainage systems where the pavements would be removed. In lieu of this, a system of subdrains would be required under all fairways and greens that would be underlain by the runway pavements.
- The West End of the proposed golf course is the site of an old dump, which has been identified for remediation (known as Area 1). The specific method of remediation, either by capping and containment via slurry walls or other method has not yet been determined by the Navy. In this area, it may be best to leave runway pavements in tact to act as a partial cap for the contaminated area. A subdrain system would then be required over the top of the runway to facilitate drainage of the golf course fill materials at this location.
- Consolidation of underlying Bay mud lenses of varying depths and thicknesses over the site will likely be triggered by the fill material added to the site. Therefore, the amount of fill material to be placed to achieve the desired contouring for the golf course will be difficult to predict. In addition, differential settlement may occur, which needs to be considered when designing underground piping systems and building foundations.

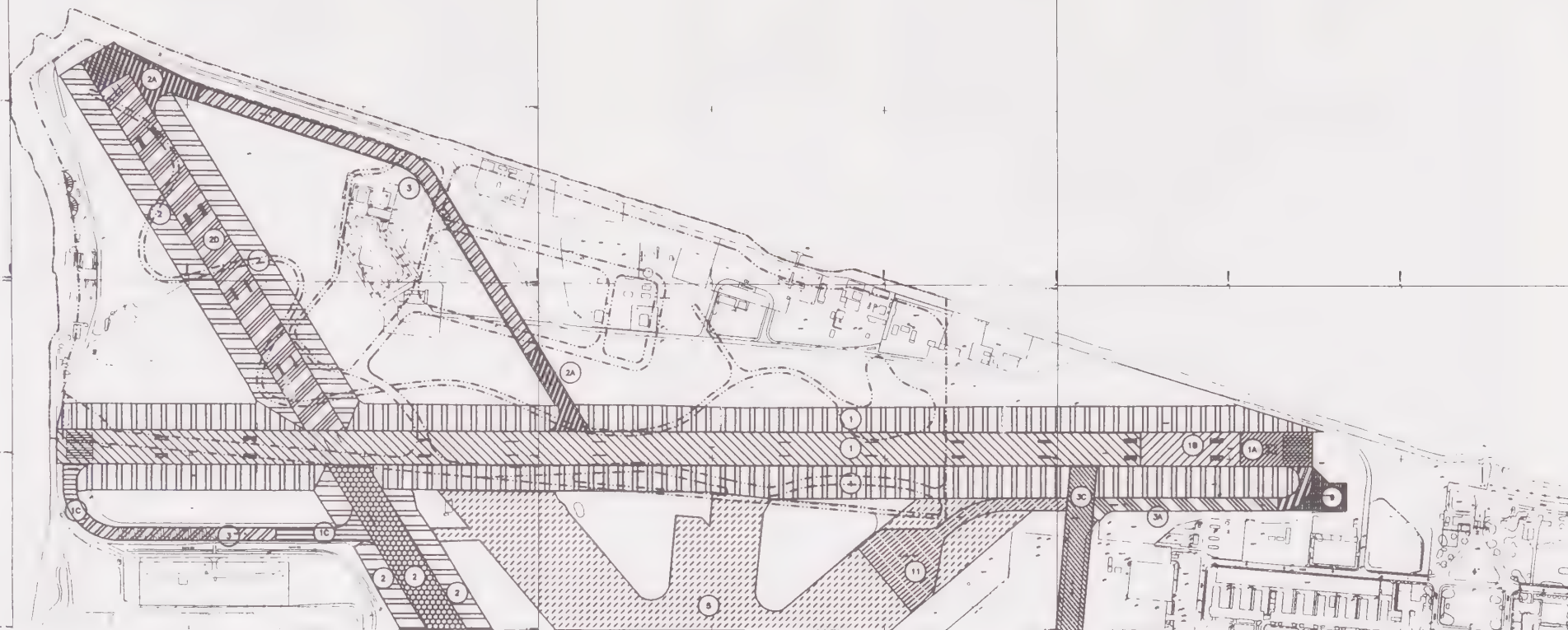
### B. Proposed Fill Material for Rough Grading

The Port of Oakland, in conjunction with the Army Corps of Engineers, is planning a dredging project within the Oakland Estuary that will deepen the channel to approximately 50 feet. The Port of Oakland is looking for sites to dispose of as much of the dredge spoils as possible locally to avoid the high cost of deep ocean disposal via barge. An estimated 20 million cubic yards of material will be generated by the dredging project.

Of this material, the Port estimates that there will be roughly 7 million cubic yards of "Merritt Sand," which is a fine-grained sand. The main concern is the fineness of this material and its ability to drain properly in order to be able to leach out salts and build-up of fertilizers in soils beneath fairways and greens. For purposes of this feasibility study, we are assuming that the Merritt Sand will be free from silts, clays, toxins or other contaminants.

Initially, it was anticipated that approximately 3/4 to 1 million cubic yards of Merritt Sand would be needed to build the golf course on top of the existing





1. RUNWAY 7-25	1. RUNWAY 7-25 (SHOULDER)	1A. PORTION OF RUNWAY 7-25	1B. PORTION OF RUNWAY 7-25	1C. PORTION OF TAXIWAY 1	2. PORTION OF RUNWAY 13-31	2. PORTION OF RUNWAY 13-31 (SHOULDER)	2A. PORTION OF RUNWAY 13-31 AND TAXIWAY 2	2B. PORTION OF RUNWAY 13-31	3. PORTION OF TAXIWAYS 1, 2, AND 3	3A. PORTION OF TAXIWAY 3	3C. PORTION OF TAXIWAY 4	5. OLD RUNWAY AREAS	9. TURN-UP PAD	11. AIRCRAFT WARM-UP AREAS
3" AC 3" AC W/ FABRIC 3" AC 8" CRUSHER RUN 3" EMUL SAND	3" AC 1 1/2" AC 6" AS	11" PCC 12" AS	8" PCC BASE CURBS	8" PCC SAND	3" AC 3" AC W/ FABRIC 3" AC 3" AC 8" CRUSHER RUN 3" EMUL SAND	3" AC 6" EMUL SAND	8" PCC SAND	3" AC W/ FABRIC 3" AC 3" AC 8" CRUSHER RUN 3" EMUL SAND	8" PCC SAND	3" AC 3" AC 3" AC 8" CRUSHER RUN 3" EMUL SAND	3" TO 6" AC 8" PCC SAND	1 1/2" AC 3" OIL BOUND ORNL 6" OIL BOUND ORNL 3" EMUL SAND	10" PCC SAND	11" PCC SAND

Exhibit C

ARRA  
ALAMEDA REUSE AND  
REDEVELOPMENT AUTHORITY

Date: JUNE 10, 1998  
Scale: 1" = 600'  
Designed: J.S.  
Drawn: J.S.  
Checked: MLM  
Proj. Engr: MLM  
File: 2880C.V01



HMH, Incorporated  
Civil Engineers • Planners • Surveyors  
1870 OAKLAND ROAD, SUITE 200  
P.O. BOX 87810 SAN JOSE, CALIFORNIA 95101-1810  
(408) 487-2200 FAX (408) 487-2222

EXISTING PAVING  
FORMER ALAMEDA NAS

Sheet  
1  
Of 3 Sheets  
JOB NUMBER  
2880-00-00



grade, which would raise the site, by about three feet. Given the potential for consolidation of underlying Bay mud lenses, it would be desirable if this quantity was closer to 1.8 million cubic yards. In our conversations with the Port, it was indicated that they could comfortably supply 2 million yards of clean Merritt Sand.

The dredged material would most likely be deposited on site by pipe directly from the dredging machine into a containment area where it would be allowed to de-water before being moved to a stockpile area or deposited elsewhere on site. Quality of the resulting material will need to be strictly controlled to assure the material will have the required drainage properties.

For purposes of this feasibility study, it is assumed, as previously stated, that the Merritt Sand will be clean, suitable for use, and that it will be made available to the project at no cost. (The potential savings to the Port of Oakland for using this site as a disposal area is conservatively \$8 - \$10 per cubic yard.) Because of the significant cost savings benefit to the Port it would seem reasonable that they pay a disposal fee for using the Alameda Point Site. Disposal fees collected could provide a revenue source for the construction cost of the golf course, greatly boosting the financial viability of the project and resulting in a win-win situation for both the Port of Oakland and the ARRA.

## VII. RECYCLING OF RUNWAY PAVEMENTS

We have investigated the possibility of utilizing (recycling) on-site pavement materials for use as base rock for both the golf course and other base uses. The quantity of material, which we estimate to be approximately 70,000 cubic yards of asphalt, 20,000 cubic yards of concrete, and 60,000 cubic yards of base rock (of unknown quality), and lack of local sources for these types of materials, make it appealing to investigate the feasibility of recycling them.

### A. Existing Conditions

Historic records of the make-up of the runways were obtained and compiled into Exhibit C, attached. Based on this information and the runway areas within the project limits, we arrived at the quantities outlined above. From these quantities, approximately 250,000 cubic yards or 500,000 tons of Class 2 aggregate base could be generated.

### B. Analysis

Based on input from companies that recycle materials, the following prices were obtained:

#### Cost:

Demolish (break up and stockpile on site in large chunks(2-3 ft. diameter)	\$3 - \$4 per ton
--	-------------------

Demolish and off-haul	\$7 - 8 per ton
-----------------------	-----------------

Demolish and crush, stockpile on site	\$8 - 9 per ton
---------------------------------------	-----------------

#### On-Site Market Value:

Crushed rock, Class 2	\$6 - 7.50 per ton
-----------------------	--------------------

F.O.B. at site  
(no trucking)

Crushed rock, Class 2 Delivered to Alameda	\$9 - 10 per ton
---	------------------

### C. Conclusions and Recommendations

Based on the cost of demolition, stockpiling and crushing the material for sale on site (F.O.B.), it would result in a cost to the project. Further, given the inherent risks of undertaking such an operation, including uncertainty of the quality of underlying materials, groundwater intrusion, exposing of existing contaminated soils and resulting remediation, to name a few, it is recommended that the existing runway pavements remain in place except in locations where it is necessary to remove them to install underground utilities or drainage facilities. The only potential "savings" would be to utilize the crushed material on-site, which has the potential of saving perhaps \$1 - \$2 per ton, if long distance trucking were avoided.

DATE	_____
BY	_____
FOR	_____
PROJECT	_____
SHEET	_____

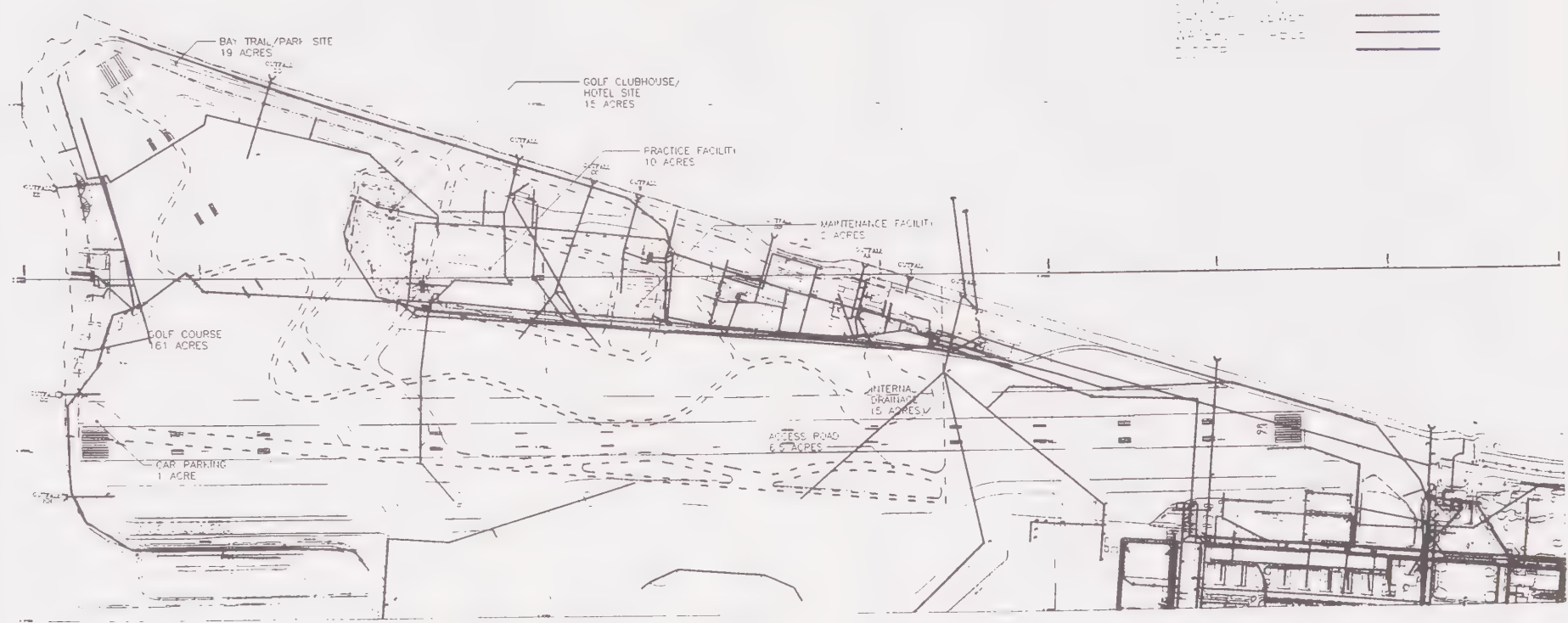


Exhibit D

<div data-bbox="451 1307 808 1413"> <p>ARRA ALAMEDA REUSE AND REDEVELOPMENT AUTHORITY</p> </div>	<div data-bbox="966 1307 1123 1413"> </div>	<div data-bbox="1134 1307 1438 1413"> <p><b>HMH, Incorporated</b> Civil Engineers • Planners • Surveyors 1870 OAKLAND ROAD, SUITE 200 P.O. BOX 871610 SAN JOSE, CALIFORNIA 95181-1610 (408) 487-2200 FAX (408) 487-2222</p> </div>	<div data-bbox="1543 1307 1837 1413"> <p>EXISTING UTILITIES FORMER ALAMEDA NAS</p> </div>	<div data-bbox="1953 1307 2058 1413"> <p>DATE BY FOR PROJECT SHEET</p> </div>
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1.00' = 1" (VERTICAL)  
 1" = 100' (HORIZONTAL)  
 1" = 100' (HORIZONTAL)  
 1" = 100' (HORIZONTAL)

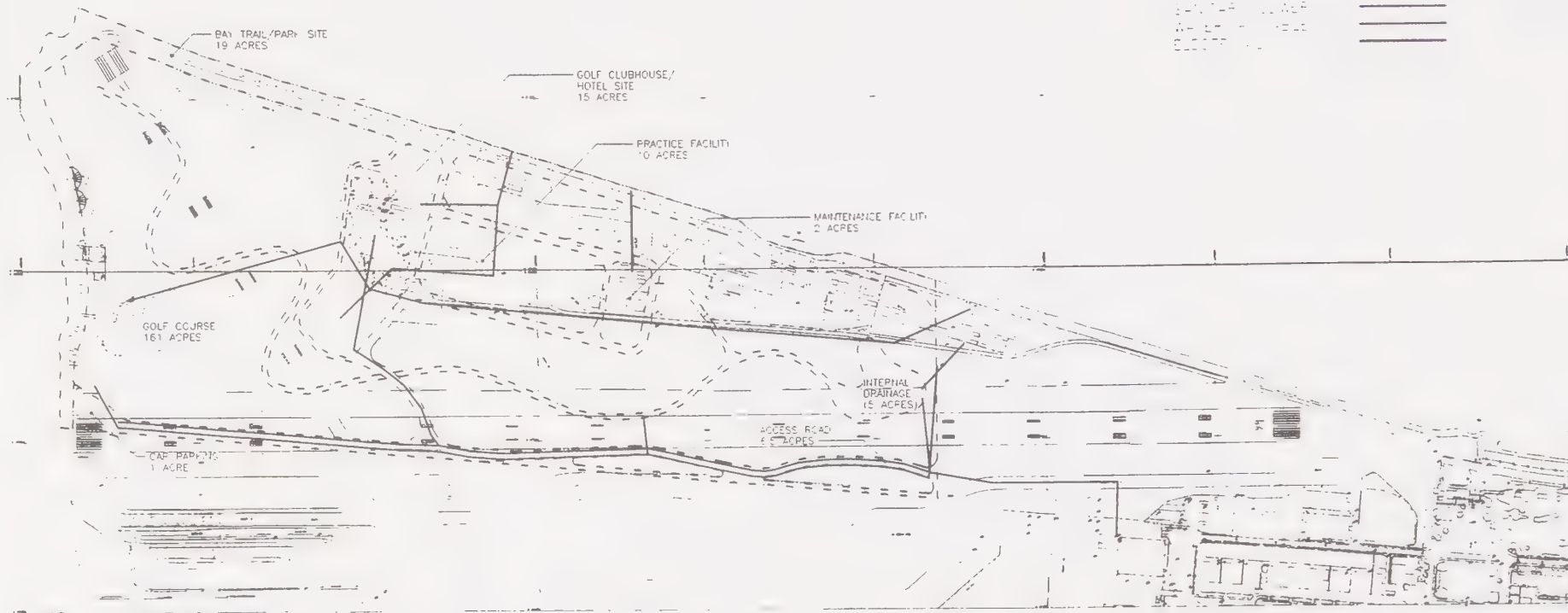


Exhibit E



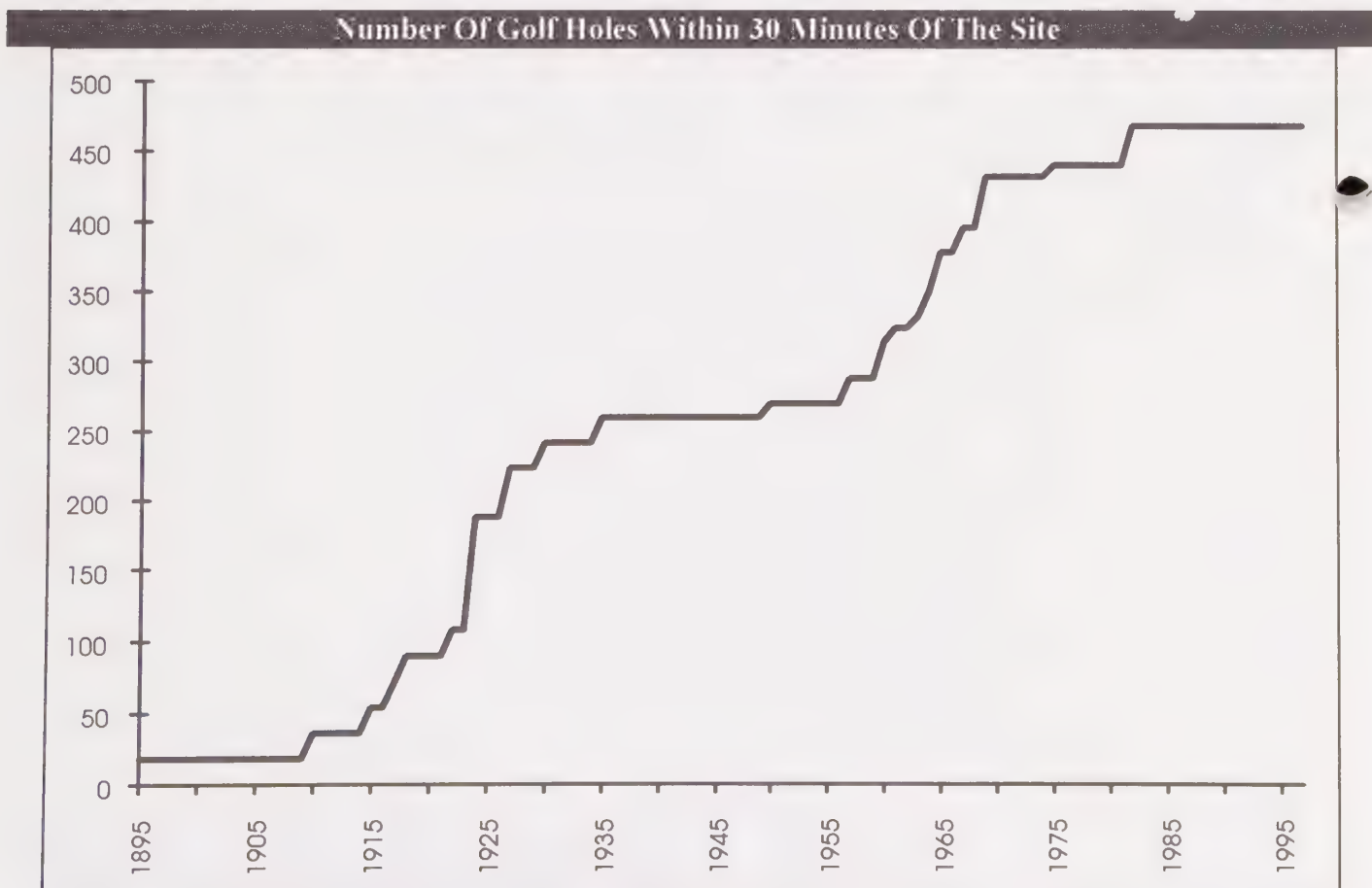
## 5. Financial Analysis

## 5. Financial Analysis

### I. THE LOCAL MARKET

#### A. Current Golf Supply

- The local market around the Alameda Point development site is defined as the area within 30 minutes drive time of the site. This local market area is displayed in the map later in this document.
- Within 30 minutes drive time of the Alameda Point development site there is a population of 2.7 million people and 33 eighteen hole equivalent courses. This equates to 82,000 thousand people per eighteen holes. Comparing this level of golf supply in the local market with the US average of 23,000 people per eighteen holes the market is clearly severely under supplied by golf.
- The graph below shows that most of the golf in the local market was constructed in two rapid development phases, the first in the 1920's the second in the 1960's.
- It is sixteen years since any new golf course was built within the local market.

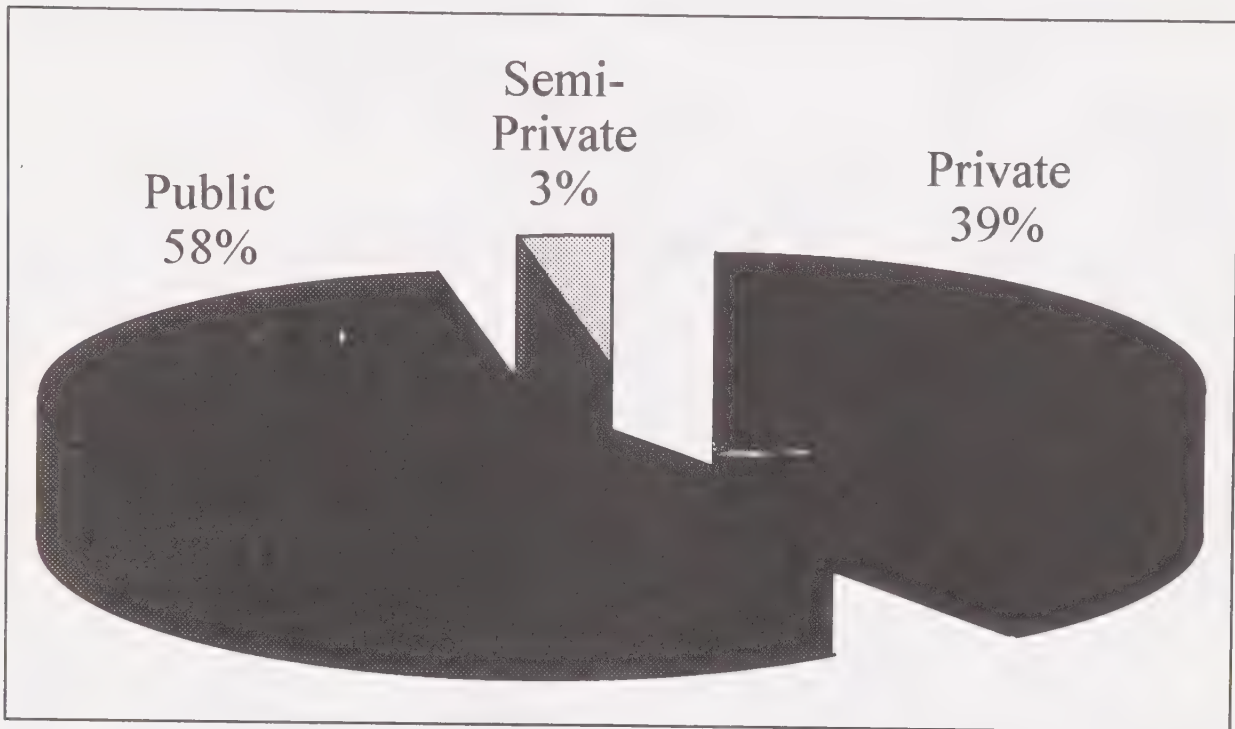




## B. Types of Courses

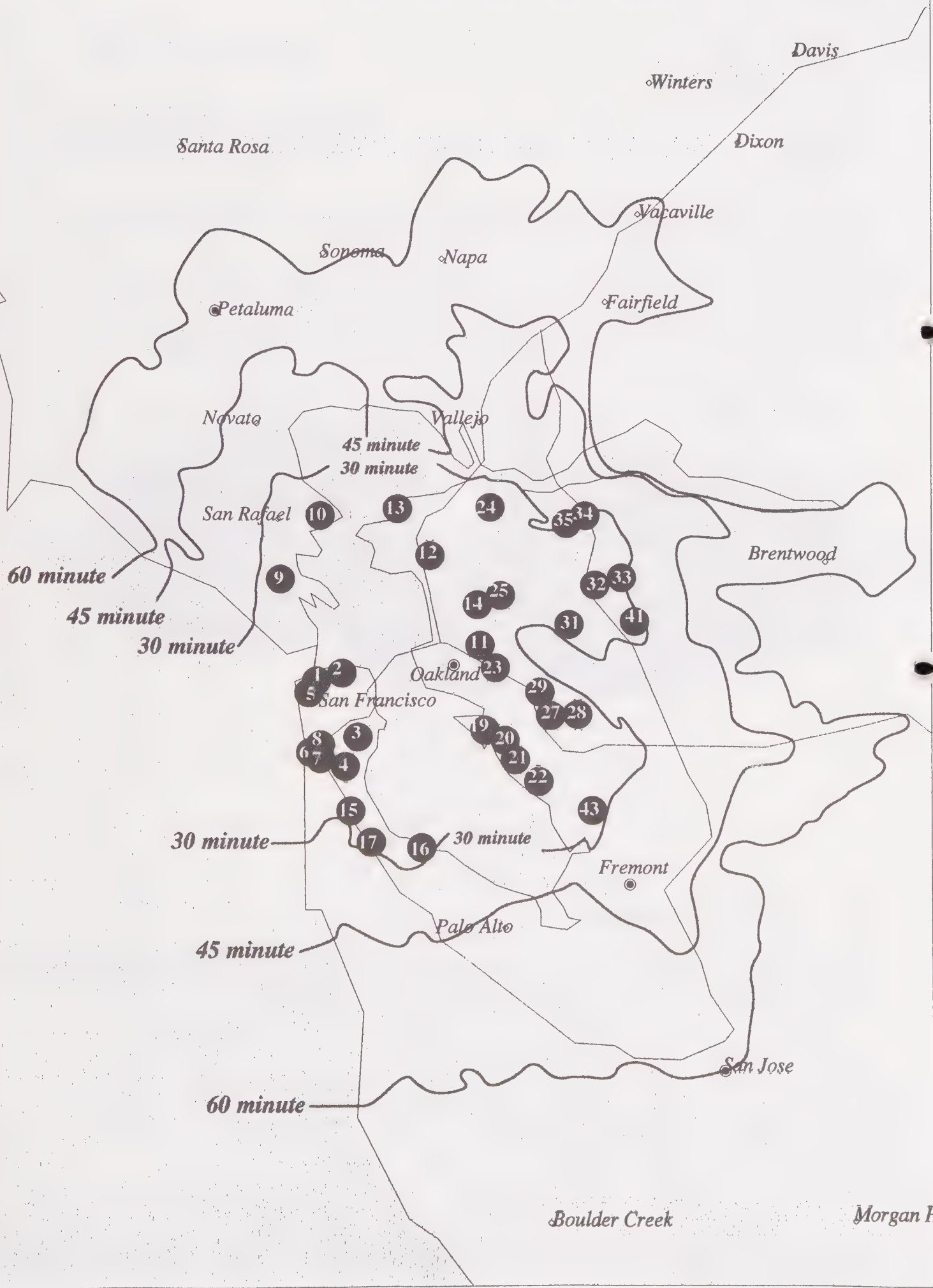
- Roughly 40% of courses in the local area are private and are closed to green fee play by members of the public.

### Type of Courses in Local Area



## C. Map of the Local Market

A map of the local market is shown on the next page. The 30 minute, 45 minute and 60 minute drive times are displayed in red. The 43 courses falling within 30 minutes of Alameda point are located. The ID numbers on each course relate to the spreadsheet following the map.

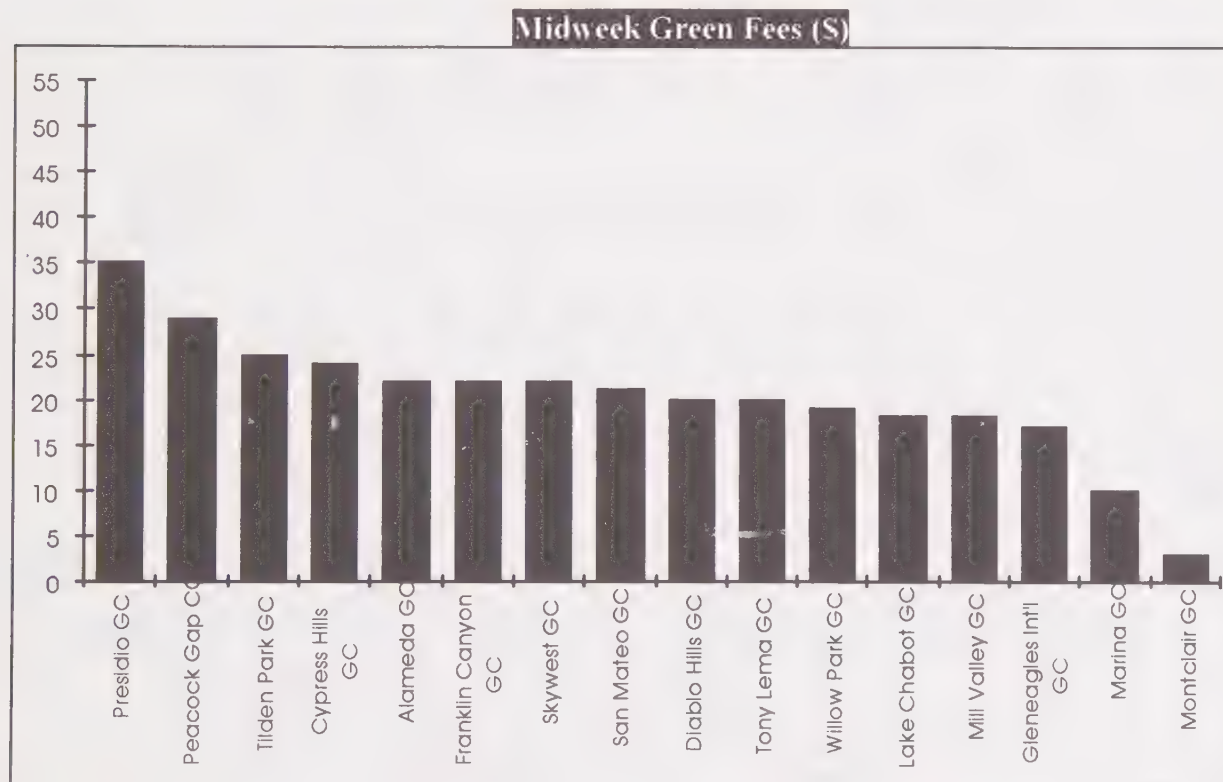


## D. Golf Courses Within The Local Market

Map ID	Name	Phone	Address	Type	Year	Holes	Range	M/week \$	W/end	Cart \$	Fee
1	Lincoln Park GC	415 221 9911	San Francisco	Pub	1910	18	no				
2	Presidio GC	415 561 4653	San Francisco	Pub	1895	18	yes	35	55	Optional	26
3	Gleneagles Int'l GC	415 587 2425	San Francisco	Pub	1963	9	no	17	24	Optional	22
4	Cypress Hills GC	650 992 5155	Colma	Pub	1961	9	yes	24	30		
5	Golden Gate Park GC	415 751 8987	San Francisco	Pub	1950	9	no				
6	Olympic Club	415 587 8338	Daly City	Pri	1924	45	yes	no	no		
7	Lake Merced G&CC	415 755 2239	Daly City	Pri	1922	18	yes	recip	recip		
8	San Francisco GC	415 469 4122	San Francisco	Pri	1915	18	yes	no	no	No	
9	Mill Valley GC	415 388 9982	Mill Valley	Pub		9	no	18	21	Optional	20
10	Peacock Gap CC	415 453 4940	San Rafael	SP	1957	18	yes	29	37	Optional	22
11	Claremont CC	510 655 2431	Oakland	Pri		18	no	no	no		
12	Mira Vista G&CC	510 237 7045	El Cerrito	Pri	1924	18	yes	recip	recip		
13	Richmond CC	510 232 7815	Richmond	Pri	1924	18	yes	recip	recip		
14	Tilden Park GC	510 848 7373	Berkeley	Pub	1935	18	yes	25	38		24
15	California GC	415 589 0144	S San Fran	Pri	1918	18	yes	no	no		
16	San Mateo GC	650 347 1461	San Mateo	Pub		18	no	21	26		16
17	Green Hills CC	415 583 0882	Millbrae	Pri	1930	18	yes	recip	recip		
19	Alameda GC	510 522 4321	Alameda	Pub	1927	36	yes	22	25	Optional	18
20	Marina GC	510 895 2164	San Leandro	Pub	1982	9	yes	10	10	Optional	24
21	Tony Lema GC	510 895 2162	San Leandro	Pub	1982	18	yes	20	25	Optional	24
22	Skywest GC	510 278 6188	Hayward	Pub	1964	18	yes	22	30	Optional	23
23	Montclair GC	510 482 0422	Oakland	Pub		9	yes	3	3	No	
24	Franklin Canyon GC	510 799 6191	Rodeo	Pub	1969	18	yes	22	35	Optional	24
25	Orinda CC	510 254 0811	Orinda	Pri		18		recip	no		
27	Lake Chabot GC	510 351 5812	Oakland	Pub	1917	18	yes	18	23	Optional	20
28	Willow Park GC	510 537 2521	Castro Valley	Pub	1967	18	yes	19	26	Optional	20
29	Sequoiah CC	510 632 4069	Oakland	Pri		18	yes	recip	no	Yes	
31	Rossmoor GC	510 933 2607	Walnut Creek	Pri	1965	27	yes	no	no		
32	Diablo Hills GC	510 939 7372	Walnut Creek	Pub	1975	9	no	20	27	Optional	24
33	Boundary Oak GC	510 934 6211	Walnut Creek	Pub	1969	18	no				
34	Buchanan Fields GC	510 682 1846	Concord	Pub	1960	9	yes				
35	Contra Costa CC	510 685 8288	Pleasant Hill	Pri		18	yes	recip	recip		
41	Round Hill G&CC	510 837 7424	Alamo	Pri	1960	18	yes	recip	recip		
43	Hayward GC		Hayward								

## E. Green Fee Price Structures In Local Market

- There is a clear gap in the market for a high-end green fee course. The graph below shows the highest midweek green fee in the local market to be \$35. Weekend green fees tend to be market up 18%.



Premium green fee golf typically priced in the range \$80 to \$150 has emerged in the US over the past decade. The first course in the Bay Area that has clearly targeted this product niche is Half Moon Bay GC. This course opened for play last September. Green fee prices at this course have already risen to \$110 midweek and \$135 at weekends. The course was projected to sell 35,000 rounds in its first years but is on track to actually achieve 42,000 rounds. The average achieved green fee with cart is \$110. In addition to the green fee the shop averages \$13 per player and the food and beverage will achieve \$1 million of sales in its first year.



## II. LOCAL AREA DEMOGRAPHIC PROFILE

### A. Population and Population Growth

- Over 2.7 million people live within a 30-minute drive from the site, 3.9 million people live within forty-five minutes, and over 5.2 million live within one hour of the site.
- The population within 30 minutes has increased by 0.85% annually since 1980. This compares to a rate for the whole of the US of 0.98% annually over the same period.
- In the next five years the 30-minute population is estimated to rise by over 90,000 people.

#### Annual Population Change

Year	30 minute Drive Time From Site	USA
1980 - 1990	0.9%	0.9%
1990 - 1998	0.7%	1.0%
1998 - 2003	0.7%	0.9%

## B. Age Profiles

- The population within the local market has a slightly older profile than the US average.

Age	30 minute Drive Time From Site	USA
0-4	6.3%	7.1%
5-14	12.3%	14.5%
15-19	5.5%	7.2%
20-24	6.1%	6.5%
25-34	16.0%	14.6%
35-44	17.8%	16.5%
45-54	13.5%	12.7%
55-64	8.3%	8.3%
65-74	7.4%	6.9%
75-84	5.0%	4.4%
85+	1.7%	1.5%
18+	78.3%	74.4%
Median Age	37.0	35.1

### C. Household Income

- The population within the local market is significantly wealthier than the US average. The average household income for the local area is 26% higher than the US average. Per capita income is 34% higher in the local area

Household Income (\$)	30 minute Drive Time From Site	USA
<15,000	12.9%	16.9%
15,000-24,999	10.4%	14.0%
25,000-34,999	12.4%	14.5%
35,000-49,999	17.6%	18.8%
50,000-74,999	21.3%	18.9%
75,000-99,999	11.1%	8.4%
100,000-149,999	8.8%	5.8%
150,000+	5.4%	2.7%
Average H/hold Income	\$61,119	\$48,592
Average Per Capita Income	\$24,638	\$17,423

**D. General Demographic Information**

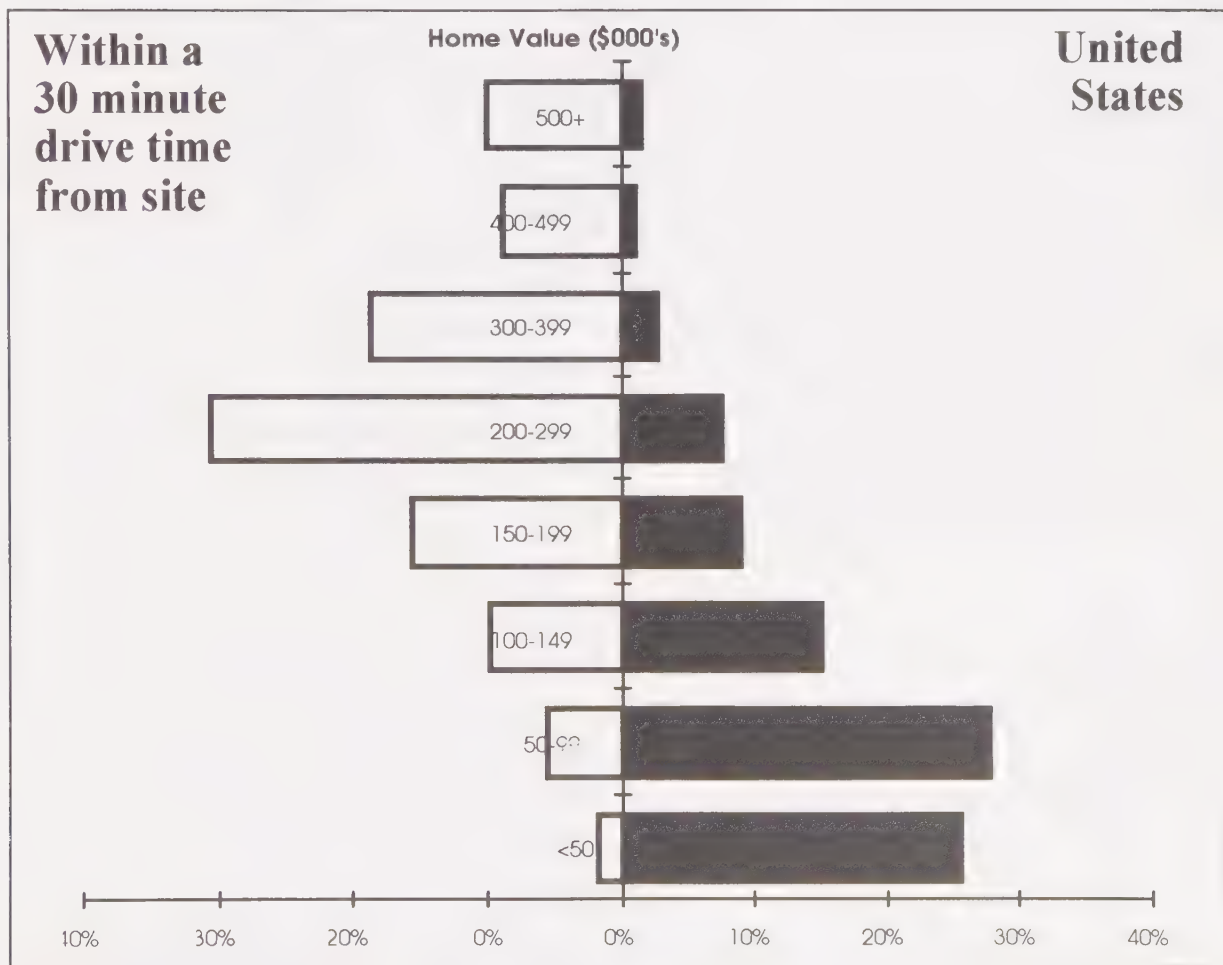
<b>Race</b>		<b>30 minute Drive</b>	<b>USA</b>
		<b>Time From Site</b>	
	White	54.0%	78.0%
	Black	14.6%	12.5%
	American Indian	0.5%	0.8%
	Asian/Pacific Islander	23.5%	3.8%
	Other Races	7.4%	4.9%
	% Hispanic Origin	17.2%	11.3%
<b>Educational</b>		<b>30 minute Drive</b>	<b>USA</b>
	(Persons 25+)	<b>Time From Site</b>	
	Less than High School	18.6%	24.8%
	High School Graduate	81.4%	75.2%
	Bachelor's Degree +	32.4%	20.3%
	Graduate/Professional Degree	12.1%	7.2%
<b>Industry</b>		<b>30 minute Drive</b>	<b>USA</b>
	(% Employed 16+)	<b>Time From Site</b>	
	Manufacturing	10.4%	17.7%
	Trade	20.6%	21.2%
	Services	38.9%	32.7%
	Public Admin.	4.5%	4.8%
<b>Occupation</b>		<b>30 minute Drive</b>	<b>USA</b>
	(% Employed 16+)	<b>Time From Site</b>	
	Managerial/Professional	33.7%	26.4%
	Technical	4.2%	3.7%
	Sales/Admin. Support	30.2%	28.1%
	Service	12.8%	13.2%
	Operator/Mover/Labourer	9.8%	14.9%



## E. Housing Summary

- The average house price within the local market is 300% higher than the national average.

Home Value	30 minute Drive Time From Site	USA
S		
<50,000	1.8%	25.4%
50,000-99,999	5.6%	27.8%
100,000-149,999	9.8%	15.1%
150,000-199,999	15.6%	8.9%
200,000-299,999	30.6%	7.5%
300,000-399,999	18.7%	2.7%
400,000-499,999	8.1%	1.1%
500,000+	9.9%	1.5%
Median Home Value	\$256,473	\$79,098



**F. Household Spending**

- The index in the table below compares spending in the local market with the US average. For example, spending on home loans is 25% higher than US average.

Consumer Goods	Average Spent \$	Spending Potential Index
Home Loans	9,606	125
Investments	14,685	116
Travel	2,060	114
Household Furnishings	1049	113
Restaurants	1,239	113
Apparel	1,478	110
Auto Aftermarket	688	109
Electronics	533	109
Home Improvement	2,305	103
Auto Loans	4,019	102
Pets and Supplies	295	101
Sporting Goods	665	101
Health Insurance	1,284	100

### III. GOLF COURSE DEVELOPMENT ALTERNATIVES

As part of study, the consulting team considered a wide range of golf development options for the site at Alameda Point. Other development options investigated were:

- The creation of a **Par 3 or Executive Course**.
- The development of a **Nine Hole Facility**.
- Creation of a **Practice Facility Only**. Such a facility would have a 25 to 50 bay practice range possibly arranged on two tiers. In addition a short course practice area consisting of bunkers, putting greens and chipping greens. The facility may be enhanced into what is sometimes called a golf academy with the addition of three to six short golf holes arranged around the outside of the driving range.
- Development of a **Regulation Length Eighteen Hole Course** aimed below the premium green fee niche, where fees would be in the \$20 to \$35 range.

Each of these development options was considered with care. Each one was rejected as a viable option on three key accounts.

- 1) As can be seen in the development budgets presented earlier in this report a major cost component of the golf is the infrastructure. For example, bringing in utilities, building the access road, creating the hike/bike trail, etc. 80 - 90 percent of these infrastructure fees remain constant whether a high end facility is built charging \$75 green fees or a very simple nine hole short course is built that would only command \$20 fees. The formidable infrastructure costs associated with converting the site to recreational use render other golf development options economically unfeasible.
- 2) As shown by the list of courses already in operation within the Bay Area there are already a large number of green fee facilities charging under \$30. There is a marked gap in the market for a high quality daily fee facility. The new high quality daily fee operation a Half Moon Bay, the other side of San Francisco from the Alameda Point site, correctly identified this market gap. This first year of operation at this high-end facility has been a notable economic success.
- 3) A major effect of the high quality golf development is the halo effect that it has on surrounding development. This effect is lost with other golf development options.

#### IV. FINANCIAL PROJECTIONS

##### A. Construction Cost (\$000's)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Professional Fees	113	163	340	340	95	44	190		
Driving Range		500							
Entry Road						850			
Hike/Bike Trail				225					
Water, Elec, Sewage				350	725	725			
Removal of Runways	0	0	0	0	0	0	0		
Importing Sand	0	0	0	0	0	0	0		
Golf Course			3,920	2,115	165				
Maintenance Building				565					
Cart Storage Barn					554				
Clubhouse						1192	1192		
10% Contingency	11	66	426	360	154	281	138	0	0
<b>Development Cost Per Year</b>	124	729	4,686	3,955	1,693	3,092	1,520	0	0
<b>Total Development</b>	124	853	5,539	9,493	11,186	14,278	15,798	15,798	15,798



**B. Profit & Loss Projection (\$000's)**

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Rounds (000's)					30	45	50	50	50	50	50	50
Range Income					200	400	400	400	400	400	400	400
Income Per Round												
Green Fees					65	65	65	65	65	65	65	65
Carts					11	11	11	11	11	11	11	11
Shop					7	7	13	13	13	13	13	13
F&B					4	4	15	15	15	15	15	15
Total Income Per Round	0	0	0	0	87	87	104	104	104	104	104	104
Course Income	0	0	0	0	2,610	3,915	5,200	5,200	5,200	5,200	5,200	5,200
Total Income	0	0	0	0	2,810	4,315	5,600	5,600	5,600	5,600	5,600	5,600
Variable Costs												
Shop	0	0	0	0	137	205	423	423	423	423	423	423
F&B	0	0	0	0	120	180	750	750	750	750	750	750
Fixed Costs												
Range					150	150	150	150	150	150	150	150
Course Maintenance				450	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Water				215	215	215	215	215	215	215	215	215
Lease Maintenance Equipment				55	110	200	200	200	200	200	200	200
Lease Carts				55	48	48	48	48	48	48	48	48
Administration					1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Total Costs	0	0	0	775	3,380	3,598	4,386	4,386	4,386	4,386	4,386	4,386
Income	0	0	0	-775	-570	717	1,215	1,215	1,215	1,215	1,215	1,215

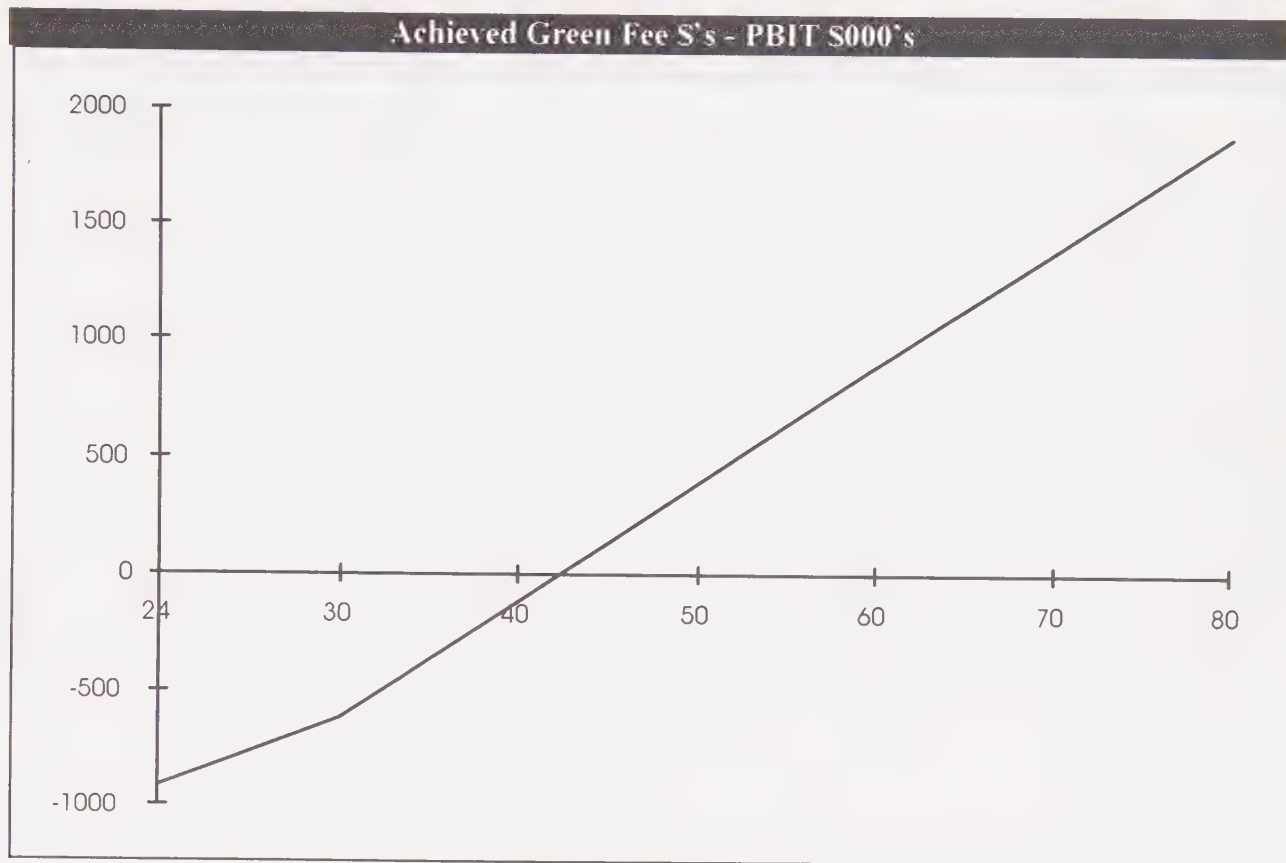
C. Best Case - Worst Case

The table below provides a best and worst case scenario for the course. While the course is expected to achieve an average green fee of \$85 a low-end scenario of \$65 is cited.

	Midweek Green Fee \$	Weekend Green Fee \$	Average Achieved Green Fee	PBIT \$ 000
Worst Case	88	104	65	1,215
Mid	115	136	85	2,215
Best Case	142	168	105	3,215

PBIT is profit before interest and tax.

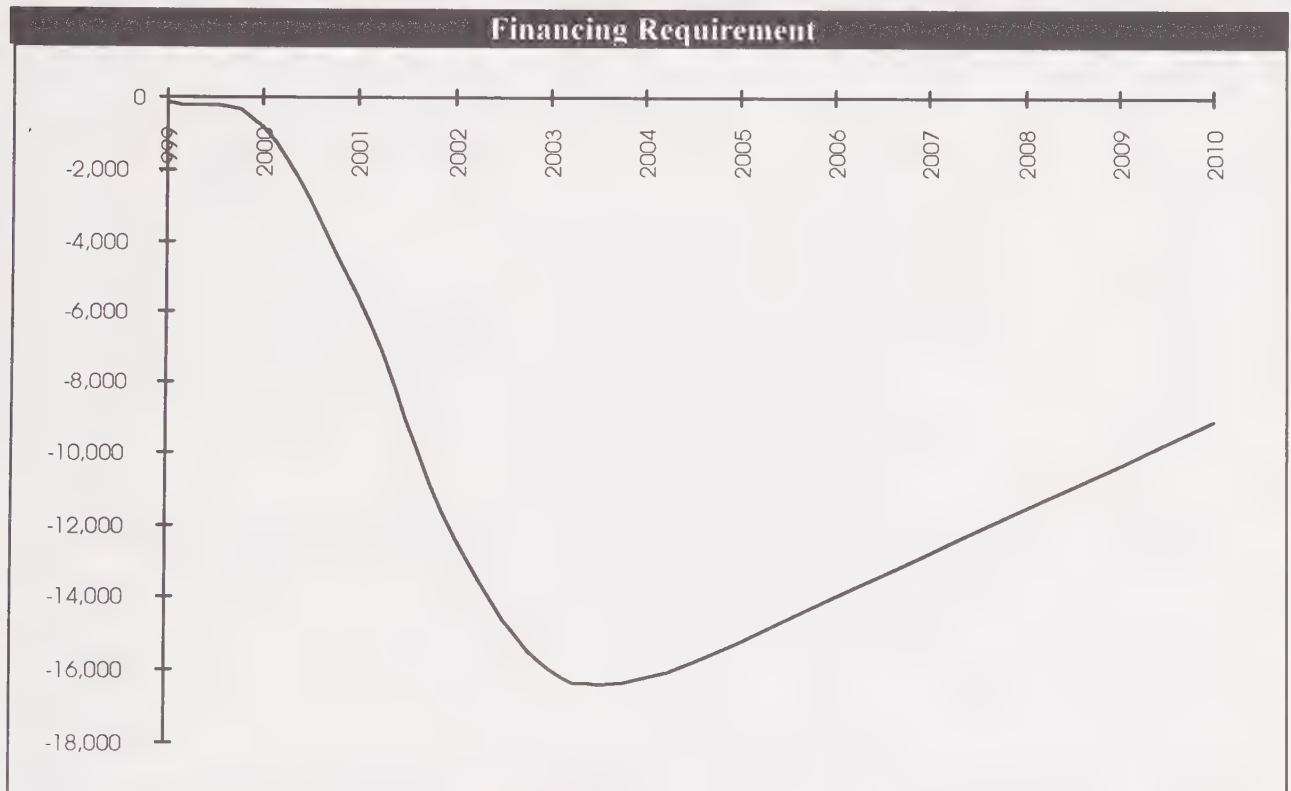
The graph below highlights the fixed cost nature of the golf business. The number of rounds and the operating costs at the Alameda Point GC are likely to remain static. The financial performance will be totally dictated by the average achieved green fee. For every \$1 increase in the achieved green fee there is a \$50,000 increase in PBIT



## V. FINANCING OPTIONS

### A. Financing Requirement

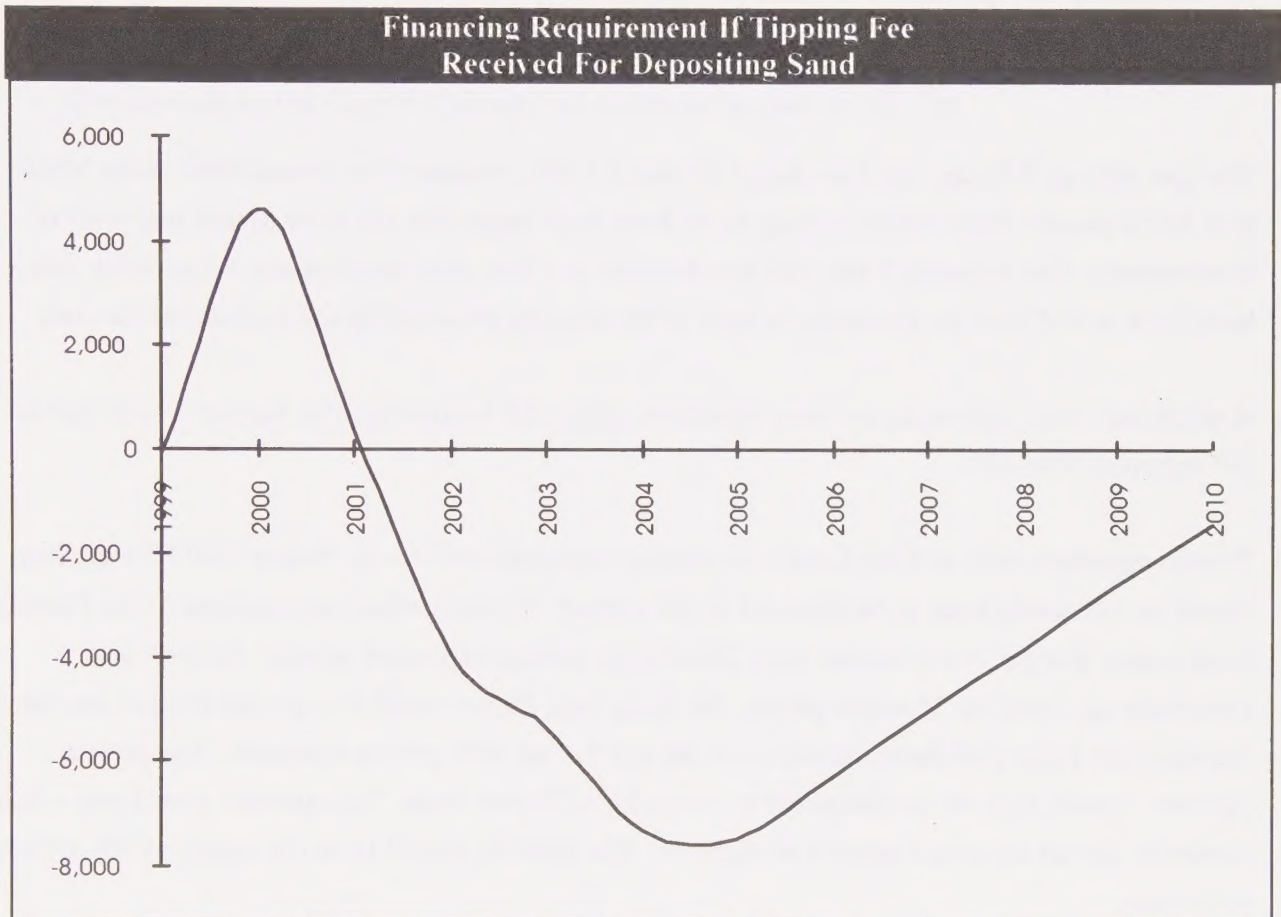
The financing requirement peaks at \$16,066 million in 2004. This figure does not include the cost of borrowing. With money borrowed at 6% there will be interest roll up of \$964,000 by 2004 bringing the total capital requirement to \$17,030 million. At a 9% cost of borrowing interest roll up rises to \$1,446 million bringing the capital requirement to \$17,518.





## B. Income From Tipping Of Sand

To develop the project 1.8 million cubic yards of clean Merritt Sand will be brought on to the site. The Port of Oakland is dredging this sand. The Port is currently barging the sand to off site locations at considerable cost. To save the cost of barging or upland disposal, the Port may pay to deposit the material on the site. In the scenario above a disposal or tipping fee of \$3 per cubic yard is assumed for depositing sand.



### C. Available Finance Options

- 1) There are a series of lenders that have specialist funds for golf lending. Textron Financial, Nations Bank and Debbis are three of the leading funds. These funds would be interested in looking at the Alameda project. It is likely that these funds would be able to lend secured against the freehold of the property itself. It would be important to get a valuation of the land for the purpose of securing such a loan. Given sufficient security from freehold of the land it would be possible to raise a loan for 100% of the development costs. The drawback of using these specialist lenders is that there rates are expensive averaging around 9%
- 2) The specialist golf lenders tend to charge around a 1.5% premium over normal bank rates. Many golf developments have trouble raising loans from local banks that are wary of golf and wary of development. The Alameda Point golf development is a blue chip development opportunity that a local bank would look at, especially in light of the security provided by the freehold of the land.
- 3) A municipal bond represents the least expensive option for borrowing; this finance would cost in the region of 5% - 6%.
- 4) Private operators such as Club Corp of America, American Golf Corp, Palmer Golf Management would be extremely keen to be involved in this project. Recently when management of the Presidio Golf course was put out to tender over 50 different groups expressed interest, the field was eventually narrowed to 15 major players for finals bids. There would be a similar level of interest if the Alameda Point golf development were put out for bid with private operators. The private operator would fund the development in return for a 25-year lease. The operator would pay a fixed minimum annual fee plus a percent of turnover. The total fee would be in the region of 5%-10% of total sales.
- 5) The clubhouse will cost \$3.8 million to build, if banquet facilities are added it will cost \$5.1 million. This cost very nearly approaches the construction cost of the course which will cost just over \$6 million. The clubhouse will be situation with excellent views of the golf course and views across the Bay of downtown San Francisco. As outlined above delaying construction of the clubhouse is one option for reducing the total capital requirement. Another option is to put the clubhouse out to tender with a food & beverage or restaurant operator. A private operator funds the construction in return for a 25-year lease to operate the building.
- 6) Explore raising finance secured against the appraised value of the existing golf course owned by Alameda.



- 7) Explore increasing the profitability of Alameda's other golf operation. With 240,000 rounds per year this is one of the most heavily used golf courses in the world. A small increase in yield per round of a few dollars would deliver significant extra income and increase the appraised value of the property.
- 8) Explore the creation of a private corporation that runs the existing course and develops and manages the new course at Alameda Point. Such a company may be similar to the Baltimore Municipal Golf Corp that has been operating for over a decade. The Alameda Golf Corp would be 100% owned by the City of Alameda, all profits being paid to the City.



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